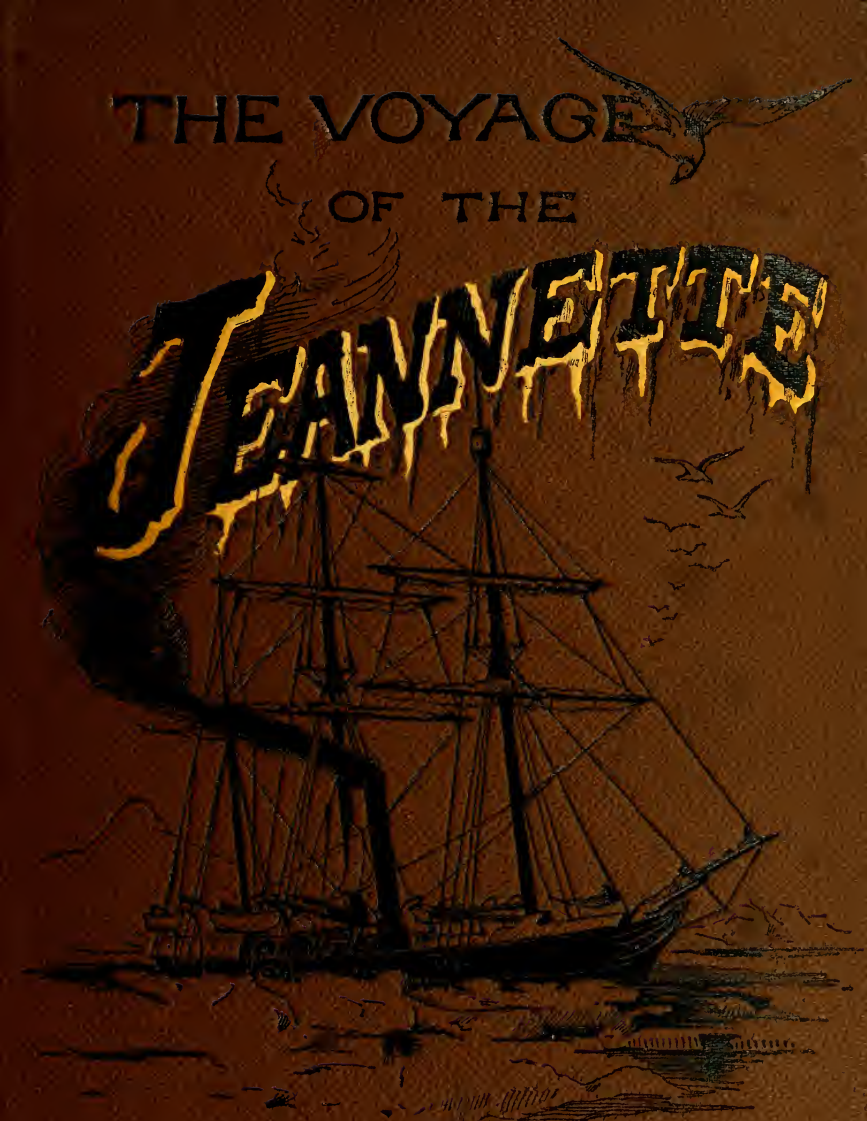
THE VOYAGE OF THE JEANNETTE



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THE

VOYAGE OF THE JEANNETTE.

THE SHIP AND ICE JOURNALS

OF

GEORGE W. DE LONG,

LIEUTENANT-COMMANDER U. S. N., AND COMMANDER OF THE POLAR EXPEDITION OF 1879–1881.

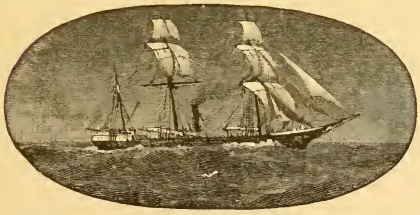
EDITED BY HIS WIFE,

EMMA DE LONG,

WITH TWO STEEL PORTRAITS, MAPS, AND MANY ILLUSTRATIONS ON WOOD AND STONE.

IN TWO VOLUMES.

VOL. II.



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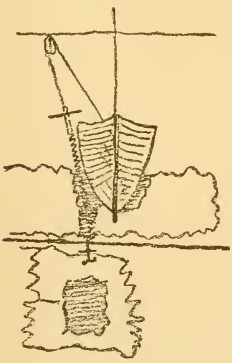
SEPTEMBER 1*st*, *Wednesday*. — At last we are on an even keel! This morning at 9.35 the ship suddenly righted, and moved astern about two feet. It was done very quietly and without shock, except to a dog who was on the gang-plank, and was suddenly tumbled, to his surprise, on to the ice below. Thin ice had formed around our free part to the thickness of nearly an inch, and the cracking and breaking of this film (?) was the only accompaniment to our movement. One or two large chunks of ice rose to the surface on the port side, and then all was still.

By previous orders, at the first movement Sweetman ran down in the fore peak and closed the opening in the extra bulkhead built last January. We feared that on

taking the water again our leak might largely increase, but we found for the time no difference. The water-level on the ship was at the height of eight feet four inches on the stem, and thirteen feet five and three fourths inches on the rudder-post. Believing that the ship was fairly afloat (her stem being sixteen inches from the groove in which it had been resting), we carried an ice-claw to the floe astern, placing it on our port quarter, and, attaching a hawser, tried heaving with the capstan. To our surprise, beyond swinging her bow a little to starboard, perhaps a point, the ship was immovable. Thinking the ice on either bow was holding her, we took the ice-claw in a line right astern, and hove again until we parted the hawser. Then we went to examining the ice around her bows. The groove in which her stem had rested was in plain sight, and a crack in that floe extended right ahead. Right against the bows on either side there was water, but on reaching down a measuring rod under the starboard cat-head Chipp found it strike on ice at a depth of seven feet four inches. Evidently, then, her keel and forefoot were yet held in a cradle. Desiring to get a little away from the heavy floe which had damaged us last winter, a larger hawser was got out right astern and hove on, but without effect. The ice-saw, worked by a rope from the fore yard, was then brought into play, and put down a hole which we found in the cradle-piece, which, with its other part eleven feet in thickness, we commenced to saw through. After we had sawn for about five or



Sawing the Ice Under the Forefoot.

six feet, dinner time came and we stopped. A careful watch had been kept of the leak, and it was now found that more water was coming in than formerly. I was anxious naturally to get the ship afloat properly, but of course I did not want to do so at the cost of materially increasing the leak while there was no chance to navigate her. Upon reflection, I concluded to leave well enough (or bad enough) alone, and accordingly all sawing and hauling was suspended. I have some fear that the broken stem or sprung garboards, whichever is the damage, may be firmly held in the ice, and that all our hauling will only tend to open the rent still more widely and leave us with a filling ship.

From noon to eight P. M. 1,044 strokes were required at the quarter deck pump to keep her free, or about 3,200 strokes per day. On the 11th August 1,295 strokes kept her free, and before that, and subsequent to July 15, 240 strokes per diem kept her free. I have no desire to go back to steam-pumping again, and God forbid that it should again be a question of main boiler and Sewell pump. With the emergency of a second winter in the pack staring us in the face, we cannot be too saving of our fifty-three tons of coal. An equal weight in diamonds would not tempt me to exchange.

The increased comfort of being on an even keel is very great. No longer is moving about awkward and inconvenient; our plates and cups are not now tempting their contents to slide away over the table-cloth, and we do not have to mount high in the air to get on board ship from the ice. The ship looks now something like a ship. Standing upright, with her nose well up, she looks like a horse eager for a start. But, poor lady! she has no chance to do so yet. All the steam-power of all the engines and boilers, and all the

strength of all the ships in the world, if combined in her, would not be able to get her to the open sea just now.

At eight P. M. the water-level stood at 8 feet 10¾ inches on the stem, and 13 feet 4½ inches on the rudder-post, showing a settling forward of 6¾ inches, and a coming up aft of 1¾ inches, due probably to the effect of the hauling.

September 2d, Thursday. — A cheerless and gloomy day. The usual fog in the forenoon, and in the afternoon until midnight an almost steady fall of very light snow. In one day we seem to have jumped into winter. All our lakes and rivulets are covered with ice an inch in thickness, and that in turn being hidden by snow, the general view is as cold and cheerless as possible. While we had such mild temperatures, and the ice was in a soft and loose condition, how anxiously we hoped for a gale of wind to break upon us to give everything a good shaking up and, perhaps, release us from our fetters. But now that everything is beginning to freeze fast again our chances of liberation seem infinitesimally small. However, never say die! something may be done in the month of September after all. Everything is for the best.

A calculation of the work done by our quarter deck bilge-pump, running 3,200 strokes per diem, gives 2,741.76 gallons of water (or, 114.24 per hour) as the extent of the leak at present.

Mr. Collins on returning from the lead, about two miles ahead of the ship, reports that it is about one hundred yards in width.

For a day or two there have been indications of land to the northeast, clouds hang steadily there as over mountain peaks, and such birds as we have noticed

moving south have come from that direction. To-day numerous small flocks of phalaropes (perhaps one hundred all told) winged their way to southwest from northeast.

September 3d, Friday. — Observations to-day obtained place the ship in latitude N. 73° 52′, longitude W. 176° 51′, showing a drift since September 1st of six and eight tenths miles to N. 37° W.

September 5th, Sunday. — One year in the ice! and we are only one hundred and fifty miles to the northward and westward of where we entered it. If a time ever comes when I can sit down quietly, free from the mental strain I am now undergoing, I dare say I shall be able to describe in some coherent style my thoughts and feelings; but at this moment I have neither power nor inclination to mention them at any length. Anxiety, disappointment, difficulties, troubles, are all so inseparably mixed that I am unable to select any one for a beginning. Articles of War, muster, inspection, and church as usual for the first Sunday in the month. Our windmill is brought into use again, as we have a wind strong enough to run it.

September 6th, Monday. — We have been treated to a spell of refreshingly low temperature, maximum 27°, minimum 17°. This, I suppose, may be termed our Indian summer! And if so what is an Indian winter? Everything is frozen as hard as a flint, and the little streams and ponds over which I used to scull or row the dingy are now covered with ice almost strong enough to bear my weight. If this continues we shall have to commence fires again on the berth deck and in the cabin, for it is but cold comfort surveying an unlighted stove.

Observations obtained to-day show a drift since the

3d of twelve and one quarter miles to S. 28° W. I suppose we may now say good-by to the Pole or the Northwest Passage. With us it is now another winter in the pack or a failure. If we get the ship in open water again, it is a question of our ability to keep her afloat.

Our pumping to-day is done by hand at the quarter deck bilge-pumps, both of which are kept going to prevent their freezing. Our deck-house progresses towards completion in its new position, and already affords a shelter to our men while engaged in thrumming a sail ready to put under our bows, if we ever get afloat again.

At ten P. M. the effect of the changed wind was heard in the motion of the young ice to southwest, which split and cracked with the old familiar noise as the heavy ice got under way. Mr. Collins, on coming in from the lead to the northeast, reported the ice in motion about eight hundred yards from the ship. Our trouble may commence earlier this year than last, therefore.

September 7th, Tuesday. — Another day of refreshingly low temperature, maximum 27°, minimum 16°; it is enough to make one heart-sick. This is worse than Weyprecht and Payer, for before a second winter stared them in the face they had a newly-discovered land in sight, had landed on it, and looked forward to its exploration in the ensuing spring. We have seen nothing, done nothing, and, so far as human judgment can foretell or the human vision foresee, we shall see nothing, do nothing but battle another winter with the pack. If the coming winter's temperature may be judged by that of the early fall, we are in for some hard experience. However, never say die! Who can tell what Providence has in store for us? Dark as our future seems to be, the light may be getting ready to shine through.

The work on our deck-house being so far advanced that we were ready to shut in the after end, the steam-cutter was hoisted out and hung up at the port cutter's davits, the cutter going to the dingy davits, and the metallic dingy to the ice. The sail for the forefoot is finished to-day, and is now thrummed and ready for use. Fires were started on the berth deck and in the cabin this afternoon, the low temperature inducing me to add thus to our general comfort.

September 8th, Wednesday. — We seem to have reached the bottom of our low temperature for the present. At six A. M. the thermometer ceased going down, and at midnight we had the comfortable figure of 25.7°.

All the ponds are covered long since with ice, and one can walk all around our neighborhood without getting his feet wet. I had a piece cut out and measured to-day, and it was found to be three inches thick. This is formed since the low temperature of the evening of August 30th.

September 9th, Thursday. — It seems we are to have a spell in the cold snap, for to-day we have had an agreeable change in the temperature. The weather is, however, dull and gloomy, no sun appearing long enough for me to obtain observations.

Ice three fourths of an inch in thickness formed since nine A. M. yesterday over the water which was left when the three-inch block was cut out.

We have again arrived at the end of sufficiently pure ice for cooking and drinking, and as I was regretfully obliged to order the resumption of distilling, the steam-cutter's boiler was again called into use. A large patch of crimson snow was found about one half mile ahead of the ship, and a handkerchiefful brought in by Mr.

Dunbar. I have had a quantity of it put away in a jar for carrying to the United States. Our liquid compasses seem very sensitive to cold weather. This morning the spirit was found oozing out around the edges of the glass covers. I had the compasses removed from the binnacles and stowed below.

September 12*th*, *Sunday.* — One more week is added to the long and weary round of weeks which records our imprisonment and drift, and we seem as far from liberation as ever. There is nothing I know of more wearing than waiting, — waiting without a chance of relief visible. Are we to be blamed if we find a year of such a life monotonous? Or is it to be wondered at that we do not welcome the beginning of a second year of the same thing? I say a second year, but not a last year; for as far as we can see ahead and judge of the future by the past, there is no good reason for this condition of things to change this side of eternity. We may pass away and our ship may be among the things that were, but I calmly believe this icy waste will go on surging to and fro until the last trump blows. But it is a long lane that has no turning, and our troubles may be approaching a relief. I hope they are, for I am becoming weary of the load of cares and anxieties I have so long carried about.

At ten A. M. I inspected the ship, and after this read divine service in the cabin, with Chipp, Melville, Dunbar, and the doctor as my congregation. Although there is no fear of my taking up a collection, a larger attendance is rare.

September 13*th*, *Monday.* — The new week seems to promise but little. Observations to-day show a drift since the 10th of six and eight tenths miles E. Considering the almost steady S. W. or N. W. winds which we

have had, I am surprised to find we have made so little easting.

September 14th, Tuesday. — The arrival and departure of one more day to record, and that is about all.

At eight P. M. the moon was rising on the southern horizon, and very much distorted by refraction. It seemed of immense size four days before full moon, and reminded one of a large city burning. Auroral flashes shot up from the eastern horizon toward the zenith, and, with the many stars visible, made a beautiful scene. At midnight, on going out to make the meteorological observation, I was considerably startled. South southeast of the ship, right ahead, the sky at the horizon was lighted up as by a coming daylight, the clear bright light being very marked. I knew, of course, it must be an auroral display, but while I looked a brilliant green, and then a brilliant red color spread all over it, very much as different colored lights are made to shine on a stage in spectacular pieces. As a scenic effect it was grand indeed. The changes were vivid and instantaneous, and had we been in open water I should have declared that the occurrence was due to signal lights from a ship. But alas! open water, if any such thing exists, must be many miles to the southward of us. I say "If any such thing exists," because I should not be very much surprised if the ocean had frozen over during the summer down to the equator.

Sweetman and Nindemann having finished the deck-house commenced to-day the erection of an inclosing porch around the cook-house, while the crew nailed canvas on the outside of the deck-house and the bows.

September 15th, Wednesday. — A regular stormy day of wind and snow. Until about five P. M. such clouds of snow were whirled through the air that our sur-

roundings at a distance of one hundred feet were as invisible as if they were in another world. Drifts into which one might flounder to his waist were as common as water holes used to be a month ago; and between them bare places of ice, worn as smooth as glass by the friction of the snow blast, caused heels to fly up without warning or avoidance. Looking to windward was a sheer impossibility. Even the dogs, usually so indifferent to weather, were cowed, and after vainly seeking for a shelter under the ship's side, or to leeward of a barrel, fairly gave it up, and lay down in disgust to be snowed in. Mounds here and there showed for a time where a dog was buried, but after a while these became so indistinguishable that it was only when somebody fell into or over them, and caused a smothered howl from the dog beneath, that the dog's presence was betrayed. All fighting was suspended by unanimous consent. We human beings remained carefully housed. We stood the cold until noon, when I directed fires to be lighted on the berth deck and in the cabin, and, seeing no let up in the severity of the temperature, continued them during the night. Temperature, maximum, 19.5°; minimum, 9.5°. We are having an early start to our cold weather this year, and though we are sufficiently seasoned to go without fire as long as the air outside remains above 20°, we are a little chilly when it gets below it. 40° seems to be the turning point inside the cabin. At 40° or over we are comfortable, but at 39° we commence to feel chilly. While the open air is 20° or so, we seem to generate heat enough to keep the cabin at 40° by our personal radiation, and at 43° or so, and even 46°, when the lamps are lighted at night. But otherwise we fall short of the requirements of comfort. No carpenter work being possible, we employ the men

in breaking out the forward store-room, getting all our pemmican up ready for an emergency, and then restowing.

At nine P. M. a very beautiful lunar halo formed, and remained at midnight, the segments of a circle having prismatic colors. At 9.30 an auroral curtain arch south of zenith and 30° in altitude, extending from southeast to northwest, was visible, and at eleven it had crossed the zenith and stood at 20° above the northern horizon.

September 17th, Friday. — Latitude N. 72° 30′ 12″, longitude W. 176° 30′ 15″, showing a drift since yesterday S. 22° E. six and three fourths miles, — a somewhat curious result, for our gale had about blown itself out without any marked change occurring in our position, and here we go away to the southward at a great rate. Occasional fog indicating ice openings, soon turning into snow.

September 18th, Saturday. — A cheerful little fall of temperature to 3.7° makes this day exceptionally disagreeable, and seems to make assurance doubly sure that we are frozen in for another winter. Not a vestige is left of the many little ponds and streams which such a short time ago might be seen in our neighborhood; on the contrary, what with snow-drifts, and the freezing over of all water, one could readily believe that water had never been here at all. The ship looks as if she had been here always, and, what is worse, intended to remain. Excellent observations to-day show a drift since yesterday of two miles to N. 35° W. And so it goes, — one day southeast, and the next day northwest zigzag, zigzag. The lead two miles ahead of the ship (southeast by south) is opening again, and, being visited by our hunting parties, two seals are brought in.

September 19th, Sunday. — The arrival of another

Sunday brings around another inspection. The deck-house being finished, except its entering porch, and the wing porches to the galley-house being completed, I am able to form some idea of how our coming winter is prepared for. I am convinced that the changed deck-house is an improvement. The berth deck is, of course, somewhat darker, but it is also much dryer, and I think will remain so. This morning's inspection reveals the fact that the two rooms opening off the berth deck (and occupied on the starboard side by Lee and Bartlett, on the port side by Cole and Sweetman) are acting as the condensing chambers for the whole deck. This is bad; but Chipp suggests placing a stove on the old galley platform, and by heating that portion of the ship prevent the condensation, and force it to the cold roof of the deck-house above. This involves moving Alexey's berth, but as his trouble generally consists in finding his sleeping-place too warm, he will be improved by building his berth up in the deck-house. I therefore approve of the stove being placed there, and during the coming week the change will be made. I think we might burn all the coal in the ship this winter without making the house as comfortable as the berth deck (because the heat would melt the frost and cause it to drip without drying it and making it disappear), while with a fire on the berth deck, and another on the old galley platform, a steady heat will be maintained, and its ascending columns will carry up the moisture to the roof of the deck-house, where it will be condensed and will remain. By this means the two decks should be kept dry: for although the temperature of the deck-house will be comparatively comfortable, it will not be high enough to cause dripping; and the berth deck, being uniformly warm, will present no cold surface (ex-

cept the ship's side) for condensation. Should we get a large enough snow-fall, heavy banking may make a warm jacket for the ship outside. The galley-house, being protected on its sides by two porches, will be padded on its forward end with the felt used in the deck-house last winter. The after end, being next the galley, will not require any protection, I imagine, but should it be found necessary will be supplied.

And so we prepare for our second winter in the pack. Our sleds are yet to be arranged, provisions piled on deck ready for an emergency, our worthless dogs got rid of to save dog food, and our wardrobe generally overhauled and made ready.

This item of dog food is a serious consideration. Thus far we have got along well enough with the help of a few walruses, seals, bears, etc. Fortunately our dogs are not fastidious, and are willing to eat anything, and failing that even, to go without. For the emergency of travel, we have saved forty days' dried fish, and of course cannot use this otherwise. To-day we (men and dogs) have eaten our last piece of bear, and we have only about half a dozen seals in the larder as our stock of fresh meat. Bears have been scarce, and but few seals are brought in; not many are seen, and of those shot, a large proportion still sink. However, we have not been out of fresh meat as yet, and have no reason to complain.

The thing that gives me more concern and anxiety in connection with our winter preparations is the readiness for a sudden abandonment of the ship in case of disaster. This is exceedingly difficult to arrange for. To place sleds and boats, or sleds only, on the ice, and pack them ready for use, involves the danger of losing them should a sudden opening occur. If we keep the

sleds packed on board ship, the quick debarking of such heavy weights would be difficult, if not impossible, without damaging them seriously. If we do neither, but have everything handy for heaving over the side, and pack afterwards, our emergency may be so sudden that we shall not have time to save anything. In any case the impossibility of being ready for anything and everything is settled. No matter which plan might be adopted, our emergency, if it came, might make me wish I had adopted another. So as feasible a plan as any will be to have sleds, boats, provisions, dog harness, sleeping-bags, knapsacks, etc., as accessible as possible. Stick to the ship as long as she will stick to us, and when she is ready to leave us try to be a little readier to leave her. I dislike to dwell on the idea of abandonment, and even dislike preparations for such a step. We have come through so much, it gives me hope of our surviving more. As long as enough of the ship remains to shelter us it is preferable to camping on ice; and I can conceive of no greater "forlorn hope" than an attempt to reach Siberia (say two hundred and forty miles) over the ice that surrounds us, and with a winter's cold sapping one's life at every step. Of course, if we were to lose our ship I would make the effort to get there, but the chances of success would be extremely problematical. Divine service was performed after inspection.

Weather generally clear and pleasant from nine A. M. to three P. M., cloudy and dull the remainder. In the early morning light snow, and after three P. M. fog — resulting from a reopening of the old lead which made our floe an island. I am very much afraid that our expenditure of fuel this winter will be much greater than last winter. We are coming to much fine dusty stuff,

a Nanaimo coal, which burns like powder, and requires a large quantity to generate heat. Last winter we had much anthracite coal in our daily issue, and that lasted longer and did better work.

September 20th, Monday. — The cold weather we have been experiencing warns us that we can no longer run the quarter deck bilge-pump without incurring the risk of freezing and bursting it. Accordingly, this afternoon we cease to use it, and fall back upon the forward spar deck bilge-pump, which, being covered by the deck-house, is protected from freezing. With the stove on the galley platform, as proposed, I hope to keep it from freezing all winter. To bring this pump into play the flood-gates in the water-tight bulkhead are closed, and the water allowed to bank up until at a height of seven inches it may be drawn by the pump. Some little water finds its way aft into the fire-room, and is pumped out from time to time by the steam-cutter's boiler, driving the altered main engine bilge-pump. Our distilling being done between four P. M. and three A. M., we can pump during that time, when necessary, letting the water accumulate during the day (amounting to five inches probably), as just now it will not freeze and do damage. We shall have to consider carefully whether the steam pumping increases our coal expenditure or not, for if it does, we shall have to pump this small amount of water by hand, altering back the main engine bilge-pump for that purpose.

By observations to-day a drift since yesterday of four and a half miles W. by S. is shown.

The carpenters commenced building a porch outside of the deck-house door, using portions of the observatory for that purpose. When our winter housing is

complete we shall have quite a village on deck. There is no doubt in my mind of the superiority of wooden houses and porches to tent awnings and hatch covers, and the benefit to be gained compensates doubly, I am sure, for the inconvenience and lumbering up the deck while making the passage from port to winter-quarters.

If I could have known before sailing from San Francisco all that I have learned during the past year, I think I could have brought about a more comfortable cruise and have saved myself much mental annoyance.

September 21st, Tuesday. — A day of magnificently bright weather, but also of low temperature. Maximum, 15½°; minimum, 1½°. Evidently we are going to have a cold winter. September only two thirds gone and a temperature nearly zero. Each day our chances of liberation seem to grow fainter and fainter. It requires a disposition more sanguine than natural to gather any comfort, or indulge any hopeful sentiment, while regarding the icy waste in which we are located. Alas, alas! the North Pole and the Northwest Passage are as far from our realization as they were the day the ship left England; and my pleasant hope, to add something to the history of Arctic discovery and exploration, has been as ruthlessly shattered and as thoroughly killed as my greatest enemy could desire.

I frequently think that instead of recording the idle words that express our progress from day to day I might better keep these pages unwritten, leaving a blank properly to represent the utter blank of this Arctic expedition.

Our pumping, however, goes on with commendable regularity. We have proved by actual demonstration that it requires an expenditure of an additional twenty-five pounds of coal per diem if we use the steam-cut-

ter's boiler to pump out such water as filters aft into the fire-room through our water-tight bulkhead. This we cannot stand, and I direct that hereafter pumping be done by hand. This necessitates the altering back again of the main engine bilge-pump. We are acquiring a thorough training and education in the art of pumping at all events, and I dare say any one of us could write a valuable paper entitled, "What I know about Pumps."

A low fog rests all the afternoon on the southwest horizon, and the sky otherwise is very nearly cloudless. At midnight there was not a speck of cloud in the heavens, and the most beautiful effects were created by a bright moon and starlight illuminating the floe and the ship, every spar and rope of which was so thickly covered with snow and frost feathers as to be simply a wonderful sight, while northeast to southwest, about 15° above the southeast horizon, extended an irregular curtain-like arch spreading at its southwest end into large patches of a most vivid sea-green. Imagine the ship standing out in bold relief against these large green patches, every rope the size of my arm, with soft down-like fluffy frostings, and the bright moonlight showing their pure whiteness to double advantage, and my feelings may be understood when I thought such a sight was worth coming for.

September 22d, Wednesday. — The early part of the day was marked by the lowest temperature so far in the month, 0.5°, but I shall not be surprised to find it go much lower before September 1880 is a thing of the past. In fact I have ceased being surprised at anything. This kind of life begets a careless sort of feeling as to what may happen, and a lazy belief that time is of no value whatever. Knowing that our surroundings to-day are the same as yesterday, we see no rea-

son for anticipating a change to-morrow. With certain duties assigned for certain hours, we move along mechanically, satisfied we can do no more and naturally unwilling to do less. Deriving our motive power from the food we eat, we perform the operations of breakfast, dinner, and supper as a duty rather than as an enjoyment. With even a liberal variety of food, we know exactly what we are going to eat and how much, and when we are going to eat it, and hence have no novelty in that respect. Eating, sleeping, and performing duties which are as regular as time and as invariable as one day succeeds another, no calculation is necessary, no one heeds the arrival or departure of a new day or a new week. A prisoner in a jail has an advantage over us; for knowing his sentence he can fix the date of his release, while we know "neither the day nor the hour."

To-day Melville changed back our main engine bilge-pump to a piston-pump as before, and arranged it so that it could be worked by hand. To use the steam-cutter's boiler for pumping as well as distilling requires more coal than I think we can afford. Our carpenters were at work felting the forward side of the galley-house, using all of the felt which remained serviceable. The sides being protected by the porches, I think we have made the cook-house habitable, and our cook and steward seem as pleased with their habitation as if it were on the banks of the Yang-tse-kiang. We have such treasures in them as no previous Arctic expedition had I am sure. Our next work is to build Alexey a house inside the deck-house, and then our township will be ready for a charter.

If it had not been for an occasional fog obscuring everything, we should have had an entire bright and

cloudless day. Observations show a drift since yesterday of five miles to S. 71° E.

Yesterday I went into winter-quarters by closing the door leading out of the forward part of my room, and opening the one leading into the starboard chart-room.

September 23d, Thursday. — A somewhat agreeable change from the low temperature of yesterday, maximum 26°, minimum 14°; and although not up to fever heat by any means, still it is acceptable, as giving a little variety. A very few lines will serve to record the events of to-day. By observations we have drifted since yesterday two and one quarter miles to N. 23° W.

September 24th, Friday. — 9.45 A. M. the ice opened at the old place about a half mile astern of the ship, the lead extending a short distance northeast and southwest. We got a seal by this occurrence, a much desired addition, for our stock is running low. Mr. Dunbar also saw a walrus, but too far off for a shot.

It is well worthy of mention that during the whole summer (and spring, too) in all the leads, openings, etc., we have seen no white whales. Last fall, after becoming beset, whenever we made excursions to the few lanes in our neighborhood, it was not uncommon to see a white whale blow; and Mr. Dunbar, whose experience makes him an authority, argues from that fact that now we are far removed from the open sea. Walruses and seals will go readily into a pack, and dive if necessary, swimming a distance under ice from hole to hole should there be no surface connection; but the white whale, unless chased, will not go so far into the pack as to jeopardize his easy return to the open water.

September 26th, Sunday. — One more week come and gone, and here we are yet! The usual Sunday inspection is made, and I am much pleased to find that

the dampness has altogether disappeared from the berth deck. In fact, it is drier than it has ever been, winter or summer, since we came within the Arctic Circle. Alexey's house is already occupied by him, and the stove is in place on the old galley platform.

September 28th, Tuesday. — The usual monotony of our lives was broken in upon to-day by the appearance and capture of a large bear, and it is such a welcome addition to our larder that its acquisition deserves more than a passing mention. Early this morning our "hoodlum gang," Prince, Tom, and Wolf, made an attack upon a valuable dog, Jim, and nearly ate him up before they could be driven off. The doctor fortunately saw them and went to the rescue, or we might have been minus a four-footed friend. These hoodlums have inaugurated a reign of terror among the pack. If a single dog strays away twenty feet from the ship, they pounce down on him like a hawk on a chicken, and proceed at once to "chew him up;" and as they are generally describing uneasy circles around the ship, they make the entire neighborhood unsafe for stragglers. The whole pack seem to be afraid of these three dogs, and cower alongside of or near the gang-plank ready for a retreat. Religiously shirking work, the "hoodlums" object to other dogs working, and attack them if they do work. We have anchored them and tied them up until their howling became a nuisance, and we had to release them in self-defense; but they were as intractable as ever. On this occasion it was determined to tie large blocks of wood to them, to hamper them in running away from work, and make their fighting qualities somewhat less obtrusive. Getting ready the blocks was one thing and attaching them to the dogs another, for suspecting evil the "hoodlums"

became impressed with the importance of looking at the ship from a distance, and departed incontinently. At eleven o'clock they were observed to be suspiciously alert, and Mr. Dunbar, who was on the fore yard, sighted a bear about a quarter of a mile from our starboard bow, to which these hoodlums at once gave chase. The alarm at once spread. Out rushed Mr. Collins, Wilson, Sharvell, Ericksen, Mr. Dunbar, and half the dogs. Of course the bear turned and ran, and being out of range already I concluded his pursuit would be another of the stern chases which we have had without result. But the "hoodlums" stuck to the game, and at one third of a mile from our starboard beam came up with Bruin, and, yelping and dancing around him, so disorganized his retreat as to make him wheel in circles, charging at one dog and then at another, until so many more dogs came up as to hold him at bay. Then selecting a kind of well between hummocks he made his stand, until Mr. Dunbar coming up stretched him out with a bullet in his side and another one in the neck. Upon examination afterwards we found that Dunbar's first bullet had gone through the heart, cutting away the lower end of it, and it explained why the bear had not again risen upon tumbling at the first shot.

Bruin was a perfect beauty! As he lay upon the ice on his belly and spread out, with his nose on his front paws, he seemed as if asleep. Little or no blood was on the surface of the ice, and the yellowish white of the fur stood out in all its richness, while so fat was the carcass that every curve of the body was as fully developed on the coat as if he had been cut out of marble.

In a triumphal procession he was dragged home on a sled, the "hoodlums" making a fine distinction between chasing a bear while alive and dragging him when

dead, by declining to be caught for harnessing. Following on the wings of the procession they saw the carcass laid out for cutting up, and then, falling victims to their stomachs' cravings, they came near for the scraps, were caught, the blocks of wood hung to their necks, and thus weighted set at liberty. But soon after, as if to show they were not subdued if burdened, they gave chase to their prey of the morning, and caused him to make his best time on record in covering the short distance remaining to the gang-plank. The dimensions of our prize were as follows : —

Length from tip of nose to end of backbone equals	7 ft. 4 in.
Length from tip of nose to end of tail . . .	7 ft. 11 in.
Girth abaft fore shoulder	5 ft. 9 in.
Girth of fore leg below shoulder	3 ft.
Girth of hind leg below shoulder . . .	4 ft.
Length of fore leg below shoulder . . .	3 ft. 6 in.
Weight before skinning and dressing . .	943½ lbs.

Such an addition to man and dog food is well worthy of a page in my journal.

In accordance with my custom, the skin and head go to the captor, Mr. Dunbar. He very generously gave them to Melville, who intends putting the skin in pickle and presenting it to Engineer in Chief Shock, upon our return to the United States. Otherwise the day was as all other days with us.

September 29th, Wednesday. — Another of our dogs has fallen a victim to swallowing a bone, and of course it happens to be one of our effective dogs. We could very well spare one of the half dozen old skeletons that would not grow fat if they ate forever, but they seem to have a hold on life that nothing short of a bullet can loosen. I cannot distinguish the defunct by a name, for to me he has had none, though the men may have chris-

tened him. The usual post-mortem examination by Iversen disclosed a bone lodged crosswise in an intestine, and the usual cutting of that article.

The cracking of a pipe leading from the steam-cutter's boiler through the steam-pipe to the water-cask resulted to-day in spoiling half a cask of water for us, by carrying along salt-water from the feed tank. We had used the water at dinner before the trouble was detected, and have consequently absorbed a certain quantity of salt in our systems, but nothing to be alarmed about I imagine. The most serious feature was the enforced expenditure of twenty-five pounds additional coal to carry on the distilling for the day after the pipe was repaired.

September 30th, Thursday. — Another bear! — I suppose one of these days in the future I shall smile at reading such an imposing manner of describing a very ordinary occurrence; but just now, where it means not only fresh meat for men, but daily food for dogs, I feel that I cannot make too imposing a heading.

About 3.30 P. M. the man on watch came in the cabin and quietly announced the stranger. Rushing out with my rifle I saw Bruin making away over the hummocks, about three hundred yards ahead of the ship. The dogs did not see him, nor for a time could they be made to see him; but noticing my excitement, they danced along before me in great glee. At first I led the chase, but being short-winded, and unused to running in such drifts as the snow had made among the rough ice, I was soon passed by Dunbar, Alexey, and Aneguin, and, easing up my gait, by Newcomb and Wilson. Alexey's dogs for a long time could not make out the bear either, but when they did see him they tore along in such fine style, that, at the distance of one mile ahead of the

ship, they caught up with him and held him at bay. Mr. Bear took refuge on top of a hummock, while his persecutors surrounded him, looking like all possessed, and dancing around like a monkey in his confusion. Alexey and Aneguin reached the spot first, and fired. Off the hummock tumbled the bear, and literally fell on the dogs beneath, Tom and "Alexey's brown dog" getting each a slight touch from his claws. A few more shots finished him. When I reached the spot he lay dead on his back, with his left fore-paw thrown across his breast, as pretty a sight as one could see in the Arctic regions. With wonderful self-denial Dunbar had held his fire, and tried to get the Indians to do so (but being at a distance they did not understand him), in order that I might come up and have the honor of killing. However much I felt the intended compliment, I was too well satisfied at the addition to our provisions to feel any annoyance at my failing to enjoy it. Melville came out with the sled, and we dragged our prize home, where we found it to weigh 469 pounds. This marked the day as eventful. Our "hoodlums" started off in fine style for the chase, but Wolf stumbled so often with his block of wood that he turned back in disgust, with a look that said plainly, "You may catch your own bears hereafter." Tom kept on, occasionally stepping on his block, and turning head over heels, and reached the scene just in time to have the bear fall on him and plant a claw in him. We removed the block as a reward, and as he of course declined to haul in the carcass, he rejoined his gang in time to meet and fall upon Alexey's dogs and thrash them for their zeal, thus no doubt easing his mind for the day.

A careful measurement of ice-thickness shows that seven inches have formed since August 31st.

I nearly forgot to mention a very pleasing occurrence, the discharge of Kaack from the sick-list and his return to duty. It is not only a gratifying result to him, but well worthy of mention in connection with the general condition of health of all hands. As his injury consisted of a broken bone, any defect in his constitution arising from his life in the ice would make itself apparent by a slowness in healing. If, for instance, anything in his food, drink, or surroundings had given him a scorbutic taint, an infallible proof would have been given by the bone of his arm uniting slowly or badly. But the process of union has gone on regularly and promptly, and the doctor tells me the cure has been effected in the same time that would have been necessary if the accident had occurred on shore in the ordinary course of events.

Another proof is presented in the gunshot wound of Alexey. This healed promptly, and the hand is as serviceable as ever. And if further proof were necessary, we can refer to Danenhower's case. For nine months has he been under severe treatment, involving operations, confinement in a dark room, deprivation of exercise, and at times shortening of diet. But though weak and emaciated, he is as free from scurvy to-day as if he had remained in America. In all our trials we have something still to be thankful for.

October 1*st*, *Friday.* — After all the space devoted to yesterday, it seems like a shame that it is necessary to use only a few lines for to-day. But so it is. Our eventful days are like rare oases in a large desert, and we would like to hurry over the vast wastes intervening. House down the quarter deck awning for the winter. In the afternoon I went out with Mr. Dunbar, Alexey, and Sharvell, and we set the bear-trap, about

two miles southwest of the ship, baiting it with a seal, and we shall now stand by from day to day for a capture.

October 2d, Saturday. — Mr. Dunbar, the natives, and I visited the bear-trap to-day, but found everything undisturbed. The trap and its surroundings had the same general dreariness, which is so painful on board and around the ship. Such a waste as this ice-field is nowhere to be seen out of the Arctic. Not a sound breaks the monotony. Not a bird is seen from morning till night; and but for our own voices to hear, and our shipmates to see (and neither the one thing nor the other is a novelty), we might easily imagine that the world had come to a stand. I can easily believe that this state of affairs always has been and always will be; and somehow or other it is not difficult to suppose that I have never been anywhere else. The regularity with which days come and go, the unchanged character of our surroundings, the mechanical sameness with which we live, eat, drink, and sleep, all go towards lulling the mind when it tries to remember any other situation in the past, or anticipate anything different in the future. That there are others in the world living in bustle and excitement we do not yet doubt, because a little over a year ago we saw them; but I am well satisfied that if we held together for five years we should not believe it. Whether this is a natural sequence of our utter stagnation or not, I must leave to others to decide. We are not lethargic to an irremediable extent, however, and if the ice were to open, we would jump quick enough to get the ship under way.

October 5th, Tuesday. — At six A. M. Chipp heard a grinding of ice to the eastward, and I suppose we shall have the satisfaction now of waiting for the repetition

of the anxious times of last winter, not knowing how soon we may have pandemonium around us. In order to provide for any emergencies we can do nothing more than getting provisions on deck, convenient for heaving on the ice, and we therefore devote the day to this occupation. Pemmican, bread, tea, sugar, cooking-stoves, alcohol, tents, and sleeping-bags are all that we can hope to be able to drag should we have to leave the ship, adding, of course, our knapsacks, medical stores, instruments, arms and ammunition, and our records, and if we can get over the two hundred and fifty and odd miles between us and Siberia with this load we shall do well.

October 6th, Wednesday. — Hardly had Kaack received his discharge from the sick-list than he is back again. To-day, while moving around the spar deck in the deck-house, he slipped and fell, striking on his right elbow and again fracturing the olecranon process. As the recovery this time will be a more tedious operation than before, we cannot count on his being all right again in six weeks.

Commenced to-day banking up snow against the ship's side. If we are to be located in the pack a second winter we may as well keep all the heat inside the ship, if possible, instead of radiating it through the side. In order to prevent the freezing of our forward pumps, we have to keep a fire in the stove on the galley platform at night, and that adds to the demand on our diminishing coal pile.

The difficulties under which we labor, the knowledge that we have done nothing, and the virtual impossibility of doing anything but retreat should the ice open (which it certainly shows no signs of doing), are almost enough to make me tear my hair in impotent rage.

October 7th, Thursday. — We continued to-day the banking up of snow against the ship's side. Daily visits to the bear-trap have thus far been unproductive of results, not even a track being found. Morning and afternoon our hunting parties go out and entirely circumnavigate the ship at distances varying between two and four miles, and do not see so much as a feather. No water, no seals; no seals, no bears; and evidently no bears, no foxes; no foxes, no birds. We are all alone in the midst of a (to us) measureless frozen ocean, the only living things in the deathly waste of the north. The days are so much alike that we almost lose track of them, or rather fail to notice the date. Man is but a superior kind of machine after all. Set him going, and keep him wound up by feeding him, and he can run monotonously like a clock, at least we do, and I do not think we are exceptional creatures.

Dull, leaden sky, gloomy as a dungeon to look at, and an almost steady fall of light snow.

October 9th, Saturday. — The ice is yet ready day after day for contemplation, and is as unchanging as the laws of the Medes and Persians. Not a sign of a bear-track, and the bear-trap was never so carefully set, nor the scraps of seal laid around it more innocently. But even bears seem to have left this locality to itself.

At eleven P. M. a slight disturbance occurred among the dogs, and it led the quartermaster to believe there was a bear within hail. In fact he thought he saw Bruin ahead of the ship, and he called me promptly from my reading. I rushed out, and though the dogs took my appearance with my rifle as a sure sign of a hunt, they could find nothing, nor could I discover any traces.

A dull, gloomy day, enough to make a man blue to

endure it. Dull, leaden gray sky, no sun, and that exasperatingly light fall of snow which is neither one thing nor the other.

October 12th, Tuesday. — Gloomy and dull as a funeral. Not a sight of the sun, and not a star. Really it is such a long time between observations that we have plenty of time to get lost.

October 13th, Wednesday. — Nothing unusual occurs to mark this day over any other. But I observe one little circumstance which I cannot account for until time or some future occurrence give a clue. While standing alongside of the ship, on the ice at the fire hole, abreast the port cabin door, I noticed a bubbling of the water in a free place, as if some seal, for instance, had just gone under. In a minute it had subsided, and the surface was smooth again. In five minutes it recommenced, lasted for a short time, and again ceased. I should not have attached any importance to it, or, perhaps, might have remained satisfied with the belief that it was caused by the discharge from the main engine bilge-pump, but Mr. Dunbar, who came in from an opening ahead of the ship, described the rising and falling of water in a small hole he saw, as if acted upon by a swell of the open ocean, and while the previous occurrence then came again to my mind, I asked myself, "Can it be possible we are approaching open water again?"

Mr. Dunbar brought in three seals, having shot and lost two more, and mentioned having seen a new bird, with red and black feathers, which tried to alight on a seal the natives were dragging. The party having only rifles with them fired at the bird, but without effect.

October 14th, Thursday. — One more day comes and

goes, and finds and leaves us in the same situation as ever.

The new location of the deck-house gives daily more and more satisfaction with respect to dryness, for it is marvelously clear from all moisture. But we must now watch for a new enemy, carbonic acid. The doctor tests it regularly every Sunday night, and his last experiment shows too large a quantity for perfect health. It will be by our constant efforts only that we can accomplish a proper condition of things, in spite of these two great enemies, — moisture and carbonic acid. Sailors, as a rule, confound ventilation with draft, and though they will unhesitatingly and without noticing it, live, eat, and sleep in an evidently impure atmosphere, they promptly complain of cold when a change of air is permitted. With a stove on our berth deck lighted during the day, and the one in the galley-room lighted during the night, with the deck-house covering the entire deck, there can be no question of a proper amount of heat being distributed. By keeping the forward skylight always uncovered, and the occasional opening of the berth deck doors during the day for ingress and egress (not to speak of the deck being cleared for inspection), the accumulation of moisture in the air of the deck is carried up into the deck-house and deposited on its cold roof and sides. So far, we are fortunate. But a fresh supply of air must be given the berth deck from time to time, and we find that the occasional opening of the deck-house door does not accomplish this. Therefore I have directed the trap-door in the roof of the deck-house over the skylight to be kept open six inches or so whenever a snow-storm is not raging, and in order that the carbonic acid may not bank up on the after part of the berth deck, the berth deck doors are ordered

to be opened, and kept open after ten P. M. Promptly the complaint of being cold is made, though the air does not move along the berth deck a mile an hour I am sure. But, by serving out some seal-skin blankets, additional cover is given, and the complaint ceases. As a further effort to reduce carbonic acid, since last Sunday's observations I have ordered the berth deck doors opened at and after nine P. M.

Beginning on September 1st, I have instituted the practice of serving out two ounces of rum once a week, generally Wednesday night, to all hands. This I consider a good thing, not only because it conduces to sociability, but because it breaks the monotony, and gives something to look forward to. This, and two glasses of sherry at dinner on Sunday, constitute the extent of our tippling. What a country this is, and how monotonous a life we lead, may be inferred from the fact that two ounces of rum every Wednesday are looked forward to as a change and excitement.

October 15th, Friday. — Desiring to get some idea of the amount of air passing through the berth deck I took a pocket anemometer down there at eleven P. M. and obtained the following results : —

Starboard door sill = 60 ft. per minute, in (i. e. from aft forward).
Port door sill = 99 ft. per minute, in (i. e. from aft forward).
Skylight hole = 96 ft. per minute, up (i. e. from aft below).
Open air = 570 ft. per minute.

Temperature at berth deck 49° Fahrenheit. Temperature, open air, 10.5° Fahrenheit.

October 16th, Saturday. — The clearing of the sky at midnight last night continued, I am happy to say, giving us twenty-four hours of bright weather, and so

far as can be judged, promises to give us twenty-four hours more. Although the temperature fell to minus 8°, it could not keep us from enjoying the bright sun while it lasted, or the bright moonlight which almost made sunset unappreciable.

I have heretofore made several attempts to describe the beauty of these Arctic winter nights, but have found my powers too feeble to do the subject justice. They must be seen to be appreciated. It is so hard to make a descriptive picture of moon, stars, ice, and ship, and unluckily photography cannot come into play in this temperature to supply a real picture. Imagine a moon nearly full, a cloudless sky, brilliant stars, a pure white waste of snow-covered ice, which seems firm and crisp under your feet, a ship standing out in bold relief, every rope and thread plainly visible and enormously enlarged by accumulations of fluffy and down-like frost feathers; and you have a crude picture of the scene. But to fill in and properly understand the situation, one must experience the majestic and awful silence which generally prevails on these occasions, and causes one to feel how trifling and insignificant he is in comparison with such grand works in nature. The brightness is wonderful. The reflection of moonlight from bright ice-spots makes brilliant effects, and should a stray piece of tin be near you it seems to have the light of a dazzling gem. A window in the deck-house looks like a calcium light when the moonlight strikes it at the proper angle, and makes the feeble light from an oil lamp within seem ridiculous when the angle is changed. Standing one hundred yards away from the ship, one has a scene of the grandest, wildest, and most awful beauty.

We have had other things to contemplate also. The

hunting parties, on going out this morning, found an opening in the ice about two miles southeast and east from the ship, and extending in alternate open and closed spots for a short distance. Where they were closed large ridges of piled-up slabs seven and eight feet thick rose to heights of thirty and forty feet. As this occurred since yesterday, the pressure and upheaval must have taken place during last night. While going out to the bear-trap yesterday with Mr. Dunbar we noticed several cracks along the ice, formed over what had been a lane of water an eighth of a mile northwest of the ship, which lane extended in an arc of a circle, or rather curve, around to northeast on one hand, and west on the other, at distances varying from one eighth mile to two miles, ending at rough and heavy ice-ridges. That ice appeared subjected then to some great strain, and to-day I was concerned to find that the new ice around us was receiving strains and pressure. The hunters — Mr. Dunbar especially — described the grinding and crashing having recommenced two miles ahead of the ship as they turned to come in; and when Nindemann came home, just before supper, he reported that the ice was at work heavily, or, as he expressed it, "the whole ocean was alive."

During the evening various snaps and cracks were heard around the ship, and occasionally we had a light jar. Going out repeatedly for examination, we at last found crevices and cracks meandering along ahead of the ship under the stern athwart ships, and here and there in other places.

For nearly nine months we have had a rest, and now our old cares and anxieties begin again, to end — when? Our circumstances are somewhat different now, for we have an injured ship, small amount of coal, and hardly

the same vigor that we had a year ago. In anticipation or contemplation of the winter before us, there is but little that can be planned. So far as human agency is concerned we have done all we can do, and must wait and take things as they come. No human power can keep the ice still, and no human ingenuity can prevent damage when it begins to grind and break up. Held fast in a vise we cannot get away, so we have to trust in God and remain by the ship. If we are thrown out on the ice we must try to get to Siberia, if we can drag ourselves and food over the two hundred and fifty miles intervening; sleds are handy, dogs ready, provisions on deck, knapsacks packed, arms at hand, records encased. What more can we do? When trouble comes we hope to be able to deal with it, and survive it! If it comes too suddenly we shall be in a bad plight, and cannot help it. From this time forward care and anxiety will hang on me more heavily than before.

October 17th, Sunday. — The arrival and departure of another Sunday marks the passage of one more week of our imprisonment in the ice. Beyond a sharp crack now and again, and the discovery of several new crevices in the ice, we have nothing to give us uneasiness, and we have a day for "calm repose and contemplation." Inspection is made at ten A. M. as usual, and divine service is performed at its completion, my small congregation of four, Chipp, Melville, the doctor, and Dunbar attending.

The day is simply magnificent, and the night beautiful beyond description. At midnight the scene is thus described by me in the log, and it was one almost worth the imprisonment accompanying it: —

"At midnight one half of the sky was covered by cumulo-

stratus clouds moving from north to south, and at that moment extending from the zenith to the southern horizon, obscuring the moon and the stars (north of the zenith the sky was clear, except a streak of cirro-stratus above a small bank of rising cumulo-stratus). Immediately following the first-named cumulo-stratus clouds, and near the zenith, was a faint auroral arch extending from east to west, with its ends slightly curving to the southward, and hidden by the clouds near the horizon. As the clouds nearly uncovered the east end, a mass of bright green light shot up, and spread like a fan over 10° of arc; and just as the east end was completely uncovered the mass changed into brilliant green, spiral curtains, terminating a bright white arch through the zenith to west. After perhaps a minute, the clouds being well clear of the arch, the light paled and lost colors, and the arch ends straggled back to northwest and northeast, the centre being at the zenith. The moon then became entirely uncovered, the floe seemed lighted as in midday, and but few faint streaks of arches remained, thin and almost indeterminate."

W. N. W. winds, and falling temperature until midnight, when it jumped up from minus 14.5° to minus 7.5°, being mild and pleasant by comparison.

October 18th, Monday. — A day of no particular occurrence worthy of mention.

October 20th, Wednesday. — I do not notice that I am more sensitive to cold this winter than I was last winter, but I am certainly more sensitive to heat. With the temperature of the outside air at 14° or 15° I find it soft and mild, and were it not that my hands break out with chilblains and old frost bites from last winter, I should experience no difficulty in going bare-handed. Of course when I go out on the ice I wear my fur jacket and suit generally, and am well protected. But in the cabin, with a temperature of 50°, wearing ordinary clothing, I am often too warm, and when by accident the temperature runs up to 60° I am

positively uncomfortable. Night after night I sleep with my air port one third open, and yet in the morning find I have slept too warm if anything. However, it is rather early to talk; we have not had our normal condition of cold yet.

An almost steady fall of small snow particles all day, enough to be driven along the surface ice (gathering salt and being consequently of no use to us), and filling up the spaces between hummocks so completely as to make many traps into which we flounder in our wanderings.

October 21*st*, *Thursday*. — Another day has come and gone, and here we are yet; and the only thing which has disturbed the regular monotony may be described as the stupendous discovery of a fox-track. Upon going out to the bear-trap this afternoon we saw a number of small foot-prints of this little visitor, and we promptly sent back to the ship for a couple of fox-traps for his benefit should he come that way again.

October 22*d*, *Friday*. — Continuing up the prodigious excitement of yesterday, Mr. Dunbar and I walked out to the bear-trap to-day to look for our fox. We found he had been there, had eaten up all the small scraps of meat laid out for him, and walked all over the fox-traps without springing them, so we walked back again hoping for better luck to-morrow. Otherwise the day was without event, and so we worry along. The routine is as regular as clock-work, and is carried out with mechanical exactness. If we must spend a second winter in the pack we cannot help ourselves, and must confront it with cheerfulness and courage. We have enough coal to keep us warm (unless some accident requires a resumption of steam-pumping), and food enough to save hunger, and the only thing to be

dreaded is our being turned out on the floe by the loss of our ship, and the knowledge that we have to traverse two hundred and fifty miles to get to the mainland, which may be safely assumed as a humanly impossible task.

October 23d, Saturday. — Our fox is not yet caught, though he visits the place and eats all he can find.

October 24th, Sunday. — Our friend the fox again visited the trap, and this time got caught in it and escaped. Hair and blood and a closed trap were the proofs of his being caught; his absence sufficiently proved his escape.

There is a considerable amount of doubt thrown on all observations taken during such cold weather as we experience in an Arctic winter. Sextants were never designed to be submitted to such contraction as they now undergo in use, and there is no way to allow for or remedy the changes produced in the length of the arc. The greater the cold the greater the contraction of course, but that gives no index error. A sextant very carefully adjusted to-day, and then having an index correction of 30″, was found after a short exposure to have an index error of 4′ apparently, but how much the arc was shortened it would be impossible to say. The mercury on the index and horizon glasses cracks and splits, and Chipp is kept busy in supplying new backs. For some time, over a month, I have been trying to get some satisfactory lunars to check our chronometers by, but they have all resulted so ridiculously, and no two alike, that I have despaired of getting anything reliable. As another resource I shall break out our zenith telescope, and see if it has power enough to define Jupiter's satellites, by whose eclipses, occultations, or transits I can get chronometer errors. The

way of the Arctic navigator, drifting in the pack, is difficult to determine in winter. Divine service followed inspection. The berth deck was as dry as a bone fore and aft, and it would seem that we have solved the problem, "how to overcome dampness in the living quarters of an Arctic ship."

October 26th, Tuesday. — Our fox is at last caught, and, poor thing, in two traps at once. Mr. Dunbar, on going out to them this morning, found the victim moaning and crying, with one fore leg held in one trap and one hind leg in the other. Dispatching him he brought him in, a fine white fox, plump as a partridge, but not choice enough for eating. Resembling as it did an overgrown cat, the game seemed too cruelly obtained, and Dunbar said he felt ashamed of himself for the capture, though admitting that he had promptly reset the traps! The skin will come in handy for trimmings.

October 27th, Wednesday. — As the winter grows on us, and our daylight fades away to the time when the sun will leave us altogether, our anxieties recommence. All the time of our perpetual day, when we hoped and prayed for a breaking up of the ice to occur, so that we might again attempt to redeem ourselves by some effort, not a sound, not a motion was to be noticed. But now, when a breaking up of the ice can serve no other purpose but disaster, so far as our human judgment can foretell, we seem to be promised enough of it. This morning at daylight a crack or lane six feet in width was discovered on our port beam, about five hundred yards distant. It extended to and joined with what was an open lane an eighth of a mile astern of the ship. (This last-named lane has remained closed or frozen over for nearly three months until a few days ago, when numerous cracks appeared in it, extending

lengthwise, or, roughly, northeast and southwest. These cracks opened on Sunday to a width in some places of eight feet, and to-day they are again closed, a ridge of broken blocks four feet in height marking where the union was made.)

At 11.30 A. M. the ship received a considerable jar, causing the lamp-chimneys and shades to rattle and ring. Most of us were on the ice at the time, and there it was unnoticed by all seemingly excepting myself. I detected an earthquaky movement or two which seemed like a lift and a shove. This, however, is merely a beginning. Next month, if it is anything like last year, will be full of events.

October 28th, Thursday. — Not a sound from the ice to-day, and evidently a period of rest or preparation. Soundings in thirty-one and one half fathoms, and an indicated drift to south.

October 30th, Saturday. — Cracking and noises of grinding commenced just after midnight, the former seeming to be under the stern, and the latter coming from some distance on either quarter. The snaps and grinding lasted until nearly three A. M., and again set in for a short time about three P. M. No evidence of any disturbances could be seen around the ship, though a crack or narrow lane was found about a mile ahead where it has opened and closed before.

At midnight an arch 10° in altitude south, made of curtains of pale green light, with masses of bright green light pulsating across it, made a brilliant auroral display.

October 31st, Sunday. — Another week has come and gone, and with it ends the month. Uneventful, and, so far as any results obtained are concerned, a clear waste of life. It is hard to feel satisfied even with our being

still alive. That, after all, seems such a negative kind of thing — a living with no purpose, an existence without present tangible results, a mechanical supplying the system with food, heat, and clothing, in order to keep the human engine running.

I have often wondered if a horse driving a saw-mill had any mental queries as to why he tramped over his endless plank, and what on earth there was accomplished by his so doing. The saw was generally out of his sight, he perceived no work accomplished, he never changed his position relatively, he worked on and on without advancing a foot, and ended his day's work in identically the same place at which he began it, and, as far as equine judgment could forecast, would do the same thing to-morrow, and every other day thereafter. If that horse had reasoning faculties, I pity him and appreciate now his thoughts and feelings. We are individually in that horse's position — we see no saw, we can detect no work accomplished, we move on without advancing a foot, we shall do to-morrow what we have done to-day and what we did yesterday, and we fill up with oats, so to speak, merely that the saw-mill may not have to suspend sawing. This kind of life is worse than Mr. Mantalini and his mangle. With him life was "one demnition grind," but with us it is "one demnition blank."

A man up here thinks a wonderful amount of nonsense, says many things which he would be surprised at remembering hereafter, and, if he writes, commits to paper many absurdities which he will laugh at afterwards. But to a physiologist, who could retain his own mental poise and strength under these circumstances, the study of human life and characteristics developed by a residence of white men in the Arctic regions would give materials for a very readable volume.

Measurements of the ice thickness to-day gave twenty-four inches, direct freezing since August 31st. Bright, pleasant weather until nine P. M., when it became overcast, and a steady rise of temperature from minus 21° to almost zero.

Inspected, according to Sunday practice, and found everything dry, warm, neat, and comfortable. We have neither cold nor moisture to complain of this winter at all events.

November 1st, Monday. — To-day our winter routine was resumed, whereby our meal hours are changed, and an enforced exercise outside of the ship takes place daily from eleven to one. Though the sun has not yet left us, I consider it well to get the exercise resumed now, for it can do no harm, and it will insure a proper ventilation of the ship during the two hours she is cleared.

I also resume the medical examination of officers and men, and shall be anxious until I get an expression of the doctor's opinion as to our general physical condition.

November 2d, Tuesday. — With to-day we have a new moon, and in prompt accordance with our experience of last year a crack occurs in the ice about five hundred yards north of the ship, in some places six feet wide, and extending to the eastward for a short distance. Beyond an occasional shriek of newly made ice being moved a little, there is no trouble received from the opening.

November 3d, Wednesday. — By Sumner of stars our position is found to be in latitude 73° 44′ N., longitude 179° 57′ E., showing a drift since October 24th of twenty-five and one third miles due west. As I did not change the date when we went to the westward of the 180th

meridian before, I do not change it now, for in all probability in a day or two we will be east of it again.

Magnificent sunset at 1.45 (shorter and shorter grow the days), presenting a solar circle showing segments with crimson lake tints. At six P. M. a faint arch 10° in altitude to northward; but at nine P. M. the sky was literally covered with brilliant auroral patches and segments of curtain arches, which at times pulsated with pale green light. The galvanometer, with one hundred feet insulated wire extending nearly in plane of magnetic meridian, showed no disturbance, and the auroral light thrown on unsized paper by a mirror showed no effect in the sulphate of quinine spots.

A magnificent large seal, weighing 149 pounds, was shot by Aneguin, and dragged in by "Smike" a good two miles, — a heavy drag for one dog. Aneguin had a ducking, however, in trying to secure the prize. After shooting, he embarked on a cake of ice and paddled out for the seal, but, on nearing his goal, the cake broke under him and in went Aneguin. Swimming to the floe edge he was helped out by Alexey and ran for home, nothing the worse for his involuntary bath. The doctor handed in his report of medical examination. Several cases, such as Danenhower and Kaack, are exceptional, and have received special mention. Of the rest of us the doctor finds nothing wrong except a general want of tone and less vigor than last year. As this is exactly what would result from our life of enforced monotony and prolonged absence from land, there is no surprise to be manifested. Generally we feel strong and well, but have, as a rule, lost flesh. The small change of temperature during the summer months compared with our spring and fall cold weather, and the short time that the respite endured, have not

been enough to allow us to spring up to anything like a normal condition. And we are again called upon to endure cold weather before we have had a decent chance to recover from our last trial. No doubt we shall be able to put in this winter as safely as last winter, so far as our health is concerned, so long as we have the ship as our home. But if we are turned out on the floe by disaster, we shall not be as well able to stand the exposure as we should have been this time a year ago.

The condition of our living quarters, as far as warmth and dryness go, is all that could be asked, and more than any other experience has shown. Ventilation of the berth deck is fairly secured by our present mode, and, were it not for our lamps, I could say the same of the cabin. Last winter while we had kerosene we had light without smoke, but now we are trying to use Walton's lamps, with oil received from the navy yard, and it is a failure. The oil is poor, does not flow readily, and easily chokes the tubes. They cannot always be cleaned, and, in consequence, the light soon grows dim. Turning up the wick makes a tremendous smoke, and turning it down dims the light too much. We have stood the smoke for a while, but it is too great for a continuance, and we shall have to fall back on magazine candles.

November 6th, Saturday. — Our long night has commenced. The sun showed above the horizon to-day for the last time this year, in this latitude, and for ninety days or thereabouts we must be content with our recollection of his looks. He struggled up about 11.30, and at noon was about two of his diameters above the horizon, and about 12.30 said good-by. Well, as far as his heat in thawing ice went he had been of very little use to us this past summer, and his absence is not de-

plored on that account. We shall miss him chiefly when the horrible yelling and screeching of the ice, and its piling up around us and squeezing and crushing, make darkness a more terrible enemy than cold.

Of this last — cold — we had a lively touch to-day. At midday it was minus 30°, and at midnight minus 33.2°, — neither of which figures did we have last winter until January. As last summer was an open (?) season, it will probably be followed by a sharp winter, and I suppose we shall see some cold yet that will make to-day seem a dream of the tropics. The ice commenced screeching at six A. M. in the northeast, and at 3 P. M. in the west. At midnight the sky was nearly covered with auroral loops from east to west, and from northern horizon to 40° south.

November 7th, Sunday. — It is idle to speak longer of the coming and going of weeks — it is record enough when I mention the coming and going of months. The arrival of the first Sunday in the month involves the reading of the Articles of War and the mustering of the crew. The reading is conducted with all the seriousness and decorum that would prevail in a frigate; and the clause, providing that "all offenses committed on shore shall be punished in the same manner as if they had been committed at sea," is delivered with as much impressiveness as if we were in a port full of sailor temptations, instead of being in a howling wilderness of ice. I think many of us look back to a "shore" as some memory of our childhood, or a previous existence in another sphere. That this world should be anything but pack ice is a tax upon even extraordinary credulity.

After muster we bundled out on the ice. It was all there fortunately, for with our present temperature it

might have melted. Minus 33°. (This is intended for keen irony, but like Danenhower's description of his foot warmer, "a hot brick, in the shape of a flat-iron, made of brass," it may sound somewhat vague and peculiar.) The sun having left us yesterday, we had the pleasure of judging where he was by a bright red tint in the sky, above the horizon. Just to think that there were people at that moment in our longitude, with the sun in their zenith, who were not happy and no doubt complaining bitterly of the heat. They have no more use for heat than we have for cold.

Inspection showed a perfectly dry and fairly well ventilated berth deck. I say fairly well if compared with perfect ventilation, but remarkably well if compared with Arctic ships in general. Divine service followed at 1.15 P. M.

During the forenoon the ice was found to be cracked between the ship and the thermometer box, and I suppose the time is not far distant when we shall see the ice floating away from us again as it did a year ago. During the day and evening grinding of ice could be heard to the southward, and generally the snapping and crackling of the surface crust.

November 9th, Tuesday. — Observations to-night show a drift since the 3d of nine and one quarter miles to S. 64° E.

To our unmitigated astonishment the sun came above the horizon at noon, some portion of his disc being visible from eleven A. M. to one P. M. Of course this is due to extraordinary refraction, for in our latitude the sun to-day at noon was 52′ below the horizon. If we were superstitious we might attach some significance to this strange occurrence.

November 10th, Wednesday. — The extraordinary re-

fraction continued to-day, and even greater in amount. The sun was well above the horizon at noon, and some portion of his disc showed from eleven to one, at which last named hour he sunk out of sight. For how long?

Mr. Dunbar and Alexey on going out to the bear-trap to-day saw fresh tracks near it, and setting Alexey's dogs on the scent a chase was inaugurated. The dogs came up with Bruin several times and got him at bay, but as the traveling was "fearful bad" the hunters could make no headway, and the dogs were forced to give in at last. When Dunbar and Alexey finally came up with the dogs the poor brutes lay extended on their sides exhausted, but the bear had gone on.

November 11th, Thursday. — The general monotony was somewhat varied to-day by Aneguin sighting a bear from the deck-house, and though he started with some dogs in chase failed to come up with it. Even the failure was a change to the monotony.

Bright, cloudless Arctic night in all its beauty of moonlight and starlight. A magnificent lunar halo at six P. M., something grand beyond description. Surrounding the moon were sharply defined circles of deep prismatic colors, making one think of a large colored glass dial strongly illuminated. The whole, 5° in diameter. Sounds of grinding ice to southward at three A. M.

November 12th, Friday. — Another day easily recorded by a few lines and the greater part of those lines devoted to mentioning the demise of another dog, a victim to a cross-lodged mutton bone. The thirty-four survivors of the canine family do not seem overcome by grief, — the advent of the steward with dish-water and dinner bones admonishes them of the greater importance of the reality of life.

The native instinct among Esquimaux is to let sick or wounded dogs take their own chances of recovery, although no lack of regard and good feeling is apparent. If a bear tears a dog, or if in a fight a long cut is inflicted, the victim licks his sore until healed. Sewing up a wound is not adopted. Anything besides a wound is diagnosed by Alexey thus, "Something wrong inside; bymby, perhaps, die." And though we have physicked and operated on dogs, "bymby" they do die.

November 14th, Sunday. — At 1.30 A. M. I was startled by a severe shock to the ship, taking her as if she were sliding down an inclined plane and suddenly brought up, or as if she had been struck a severe blow under her stern. I ran for the man on watch, but he had noticed nothing he said, and there were no signs of disturbance in the ice. I learned afterwards that the shock had awakened everybody aft, but that no one forward had felt or noticed anything; it may be well to add that so callous have we become to such things as shocks that nobody turned out. At six P. M., while the ice was grinding in an ugly way in the lead one eighth mile astern, I was on the deck-house with the zenith telescope, looking out for occultations of Jupiter's satellites. Mr. Dunbar came up and quite earnestly asked me if I heard the pressure going on; but as I was watching Jupiter intently I made some such indifferent answer as, "Heard it some time ago," etc., quite to his astonishment. No doubt he thought that I was taking things easy, but the fact is I have long since concluded to borrow no trouble. We cannot prevent any disaster that may befall us, and we have made all possible provision for its coming. Human strength is of no avail and human wisdom of no value.

In our position we have done all that man can do, and we must leave the rest with God. After breakfast, as soon as people began to move around, it was discovered that the lead a mile ahead of the ship, as well as the lead one eighth mile astern, were both open, the latter to a width of one hundred yards. Hunters were out at once and Nindemann got a seal, in which was found an embryo, as beautiful an addition to our collection of natural history as we have yet received. Except as to its flippers it looked like a puppy in many respects.

Inspected the ship at eleven, and had divine service at 1.30. The berth deck, for dryness and general comfort, was as perfect as perfection itself. If we keep it all winter as it is now, we may consider that we have solved a difficult (heretofore) Arctic problem.

November 15*th*, *Monday*. — A day magnificently bright and clear. For the greater part of the day the sky was absolutely cloudless, and a bright moon and starlight made up a superb Arctic picture. Light S. W. breezes and a most remarkable rise of the barometer from 30.15 to 30.95. It will be well worthy to note carefully the result of this occurrence, particularly as it comes about the time of full moon. If a full moon for tides, a high barometer for wind, do not make some remarkable change in the ice I shall be much surprised.

November 16*th*, *Tuesday*. — The barometer goes up, up, until at nine A. M. it reaches its maximum 31.08; at nearly the same time the moon became full, so these two occurrences coincided. Light southerly breeze of six miles had diminished to two miles by noon, and as the barometer then began to fall I was on the lookout for some unusual result. The wind began to back and

freshen, going from S. S. W. to E., freshening gradually, and the barometer dropped to 30.89 (one tenth of an inch in the last three hours); the temperature went up in the most charming manner to minus 10.5°.

Sounds of grinding ice were heard from ahead and astern at three P. M., but nothing remarkable occurred, and we must wait to see what to-morrow will bring forth.

November 17th, Wednesday. — The result of the wonderful barometric action has shown itself to-day in a lively gale of wind which blew the light snow surface around in clouds of blinding dust, and banked them up here and there in hard masses strong enough to bear a man's weight. The wind varied between E. and E. S. E. all day. The barometer dropped rapidly from 30.77 to 30.10, and the temperature rose steadily to plus 8.5°, giving us by comparison a temperate zone existence.

November 18th, Thursday. — The gale came quickly, lasted but a short time, and is gone. Dull and gloomy weather; heavy water-sky to northward.

November 21st, Sunday. — Usual Sunday routine of inspection and church.

November 22d, Monday. — I said nothing yesterday about the dryness of the berth deck and ward-room, for those places are now steadily dry. The galley-house, from its exposed situation, has given some discomfort, but I hope that is now overcome. Deprived of its shelter of last winter, the deck-house, its forward end is not sufficiently protected by the felt which we have padded it with. As a consequence, condensation takes place on this forward end during the night (the galley fires are out at four o'clock), freezing and giving no trouble. But when the galley fire is lighted in the morning, this

ice melts, and used to make the two beds wet. By building a little canvas pocket or back to each berth, the ice can be scraped out readily each morning before it melts, and the enemy is accordingly thus circumvented.

In my room and in Chipp's room condensation takes place regularly on the forward bulkhead, and generally remains as ice. But sometimes, when the temperature of the cabin runs up to 60° by inadvertence, our rooms get warm enough to melt the ice, and a little pool or meandering stream results. This, of course, is at once dried, and the evil is checked. But when the berths are against the inner bulkheads, everything is as dry as a bone. Low temperature as a rule, except at nine and six P. M., when some ice opening made heat escape from water exposed, and the temperature jumped up.

November 23d, Tuesday. — Another day of the usual stagnation. Alexey's dogs got on the trail of three bears, overtook them, and brought them to bay for the time; but the bears escaped by swimming across a lane of water before Dunbar and Alexey could come up.

November 24th, Wednesday. — Light, variable airs. A day more devoid of interest it will be difficult to find.

November 28th, Sunday. — One more week is come and gone, and our life of monotony continues. The sameness of our existence has become painful, and life seems a burden. The mere fact of doing something would be a relief, but even that is denied us. We have done nothing, are doing nothing, and, so far as we can see, shall do nothing that can be of any use. To eat food and wear out clothes, without any result for the money expended, is poor comfort. I am satisfied that we are affected by the length of time since we have had foot on shore. Like the old saying, "Dogs need

grass occasionally," may be quoted as a proverb, "Man needs land once in a while." Excepting the small party that landed at Koliutchin Bay, none of us have set foot on the land for nearly fifteen months, and our sensations now are somewhat dull when we try to realize what it was like. According to my idea, we have become receivers of magnetism without proper earths to let it escape. Our rest is broken and unnatural. It is not an unusual thing for those of us who turn in at ten P. M. to lie awake until three A. M.; and I, who cannot turn in until after midnight, never turn in before one o'clock, and rarely get asleep until nearly 3.30. We are all awake at various times afterwards, and no one sleeps after nine A. M. Each morning we are dull and heavy, having no feeling of rest obtained, and a kind of lethargy clings to us until we get out for our daily walking exercise from eleven to one. From that time forward we are in our normal condition, having no especial desire for sleep, and yet feeling somewhat out of sorts for want of it.

November 30th, Tuesday. — Soundings in twenty-five fathoms. Very rapid drift to N. N. W. At three P. M., by a Sumner of stars, the ship is placed in latitude 74° N., longitude 178° 15′ E., showing a remarkable drift in two days of twenty-two miles to N. 32° W. Hardly believing that we could have gone so far, I got the meridian altitude of Jupiter at eight P. M., which gave a latitude of 73° 50′, differing 10′. But as the meridian altitude was only 18°, and the refraction accordingly much in doubt, I decided to consider the Sumner nearer correct.

December 2d, Thursday. — The usual monotony was very pleasantly broken to-day by the killing of a bear. At ten A. M. Chipp sighted him, and got within eighty

yards of him, but it was so dark as to prevent seeing the sights on the rifle. Like my adventure of August 22d, the bear showed no fear of Chipp, but advanced toward him until the rushing of men and dogs startled him, and he then turned and ran. Dunbar soon overtook and passed Chipp, and Alexey and Aneguin passed both, while the dogs took the lead and brought Bruin to bay. Alexey got the first bullet in the prize, so the skin goes to his employer, Mr. Bennett; Dunbar got the second shot, and Aneguin the third. The fourth and fifth shots were delivered by Dunbar and Alexey, and the prize was ours at about 1,000 yards on our port quarter. He was a fine capture. Length over all, eight feet three and one half inches; weight, eight hundred pounds; a welcome addition to our provisions and dog food. The traps were both found tripped but empty, showing that they had been visited. Preparations are being made for rigging one of our whale-guns at the trap to deliver a charge of buckshot, which ought to astonish if not kill any bear who trips the line attached to the trigger. A lively day for wind. The surgeon's report of examination is satisfactory. An improvement is noticed in our condition this month over last month.

December 5th, Sunday. — At ten A. M. a crack was found in the ice three hundred yards east. This is the line of the same break that occurred some time ago. At eleven P. M. the crack closed, grinding and groaning going on at a great rate. After nine P. M. the cold made our fastenings snap and crack. Observations show our drift since November 30th, E. fifteen and one fourth miles. The auroral display was exceedingly fine to-night.

December 7th, Tuesday. — A bright, pleasant day until noon, when it began to cloud up, becoming en-

tirely overcast by three P. M., and so continuing with occasional clear spots.

December 11th, Saturday. — Our position is determined to be in latitude N. 73° 44′, longitude W. 178° 56′, showing a drift since the 6th of thirty-three miles to S. 74° E. This is remarkable for its amount, and would be satisfactory in its direction if it would only continue to the Atlantic Ocean. The day is otherwise worthy of note for its clearness and brightness, and its intense cold, minus 39°, which, later, led me to cut the usual two hours' exercise down to one hour.

Frequently during the day we were startled by loud reports like the discharges of heavy guns, and the ship was considerably jarred by them. I can only account for these noises by supposing that the heavy ice splits under contraction caused by the intense cold.

December 12th, Sunday. — The arrival of another Sunday brings the usual inspection, which is satisfactory, as showing dry quarters and other internal comforts. Divine service followed at 1.30.

December 15th, Wednesday. — A very severe day, N. N. W. winds, backing after three P. M., and reaching W. N. W. by midnight. The temperature begins at minus 40°, and steadily falls until it reaches minus 43°; the lowest point of our mercurial thermometer 4,313, spirit thermometer 4,397, then reading minus 40°. The purple bulb spirit thermometer, which agreed very well with our mercurial last winter, was now exposed, and it went down until at midnight it read minus 48°. The sky has been absolutely cloudless all day.

December 16th, Thursday. — I have been waiting for a long time in anticipation of making general observations on our surroundings, weather, etc., at the time of the total eclipse of the moon, which occurred this

morning; but I suppose I thought about it so much, or thought about so many other things, that I lost it in the confusion of my mind. For the first intimation I had of having overlooked the time was a note in the slate this morning of its approaching expiration at three A. M. All that I can remark about this eclipse, with reference to our experience, is, that it was preceded and followed by extreme cold; that for twenty-four hours previous we had an absolutely cloudless sky; during the eclipse a thick haze prevailed, and afterwards cloud-forms, cirrus, cirrus-stratus, and stratus, were in view. During the day we had numerous shakes and jars, as though we were passing over ice-cakes. One of these was sufficient to set my lamp swinging.

At three A. M., while lying awake, I heard two singing or humming sounds along our wires in the cabin, resembling the buzz of a bee, or the whiz of a mosquito. These came from the vibrating of the diaphragms in the Bell telephone receiver and sender, indicating an electric storm without, etc. This subject is now receiving particular attention from Chipp, and will be described thoroughly in a more suitable place than this journal.

December 19th, Sunday. — Inspection at eleven, church at 1.30, and this is the record of one more day in the Arctic regions.

December 21st, Tuesday. — This day is noticeable chiefly as having decreased by one the number of our dogs. He was known in life as "Hard-Working Jack." The usual post-mortem was performed by Aneguin, and it was found that the premature demise was due to several mutton-bones, two pieces of a tin can (cutting entrails, as might be expected), a piece of cloth, and the fag end of a rope.

December 22d, Wednesday. — Though the sun yesterday reached his greatest southern declination, and commenced his return, I do not notice any difference in the amount of light. We have had dull, gloomy weather, dark as a pocket, and very depressing.

December 24th, Friday. — Curious weather. Fluctuating barometer, extremes 29.85 to 30.03. Very hazy, lowering, dull weather, and a nearly steady fall of fine snow.

In the evening we had a minstrel entertainment in the deck-house, somewhat improved over last year.

GRAND OPENING
OF THE
NEW JEANNETTE OPERA HOUSE,
CORNER FORECASTLE AVE. AND BOWERY,
Friday Evening, Dec. 24, 1880.
Doors open at seven o'clock. Performance at eight.
COMPLIMENTARY.

The success of the evening, however, was Sharvell as a young lady, in an after-piece. Görtz, as costumer, had made out of our calico a fine dress, with paniers, etc., complete, and found means to construct a beautiful wig of long blonde hair. With these, white stockings and low shoes with blue rosettes, Sharvell transformed himself into a very comely young English miss, quite calm and self-possessed. A feature of the evening was presenting each guest, on entering, with a little buttonhole bouquet of colored paper leaves.

The jokes were of the usual order, some broad ones being inevitable. The conundrums were rather feeble: "Should Melville give an alarm of fire, what place would it remind you of?" "Melville Sound." "Why was Chipp like McClellan?" "Because he was liked by his men." "Why was Danenhower like his native

city, Washington?" "Because he was at the head of navigation." "Why was I like the mainmast?" "Because I was de long-un." "Why did the crew of this ship resemble the Captain?" "Because he is Commander, and they come-under, too," etc., etc.

Probably, however, the most acceptable occurrence was the issue of a double ration of whiskey, with which, hot water, and sugar, we tried to be cheerful, and make Christmas Eve rather less dreary than many of our days now seem.

Christmas, December 25th, Saturday. — The day was made as acceptable as possible fore and aft, by the providing of a good dinner from our resources. And I think we may refer to our bills of fare with pardonable pride. Our mince pies were a work of art; though they were made from pemmican and flavored by a bottle of brandy, they were as delicate to the taste as if compounded from beef fresh from market. Hot whiskey punch in the evening fore and aft brought an agreeable close to our second Christmas in the pack.

CHRISTMAS DINNER, 1880.

CABIN.	BERTH DECK.
The usual Saturday Soup.	Soup.
Roast Seal, Apple Jelly.	Roast Seal, Apple Jelly.
Tongue.	Bacon (broiled).
Macaroni.	Macaroni.
Tomatoes.	Tomatoes.
Mince Pies.	Mince Pies.
Plum Pudding.	Figs.
Figs.	Raisins.
Raisins.	Dates.
Dates.	Nuts.
Nuts.	Candy.
Candy.	Chocolate or Coffee.
Chocolate and Coffee.	

There is some atmospheric disturbance at work to the southward of us, which may reach us later, for in no other way can our high temperature, plus 11.5°, and rapid drift be accounted for.

December 27th, Monday. — A very remarkable auroral display at three A. M. is thus described by Chipp: "A bright auroral curtain about 10° above horizon, from east southeast to northwest, generally white, but occasionally showing a green shade, and rarely a brownish red color, which disappeared as soon as seen. Above this curtain the sky was of a deep blue-black color, through which the stars shone brilliantly, as they did also through the deepest part of the curtain. Above the deep blue-black color there were irregular spirals and streaks of white light, which were in continuous motion, appearing and disappearing rapidly. From east to west, through zenith, was an irregular arch formed of detached streaks of brownish red light, among which white light would suddenly appear, and as suddenly vanish. This arch was 5° broad. Stars shone with apparently undiminished brilliancy through the deepest color.

"Between this arch and the bank of stratus clouds above the southern horizon the sky was covered with irregular patches and streaks of light, which seemed to drift away to windward. At 3.30 all had broken up and drifted to southwest, and there succeeded white flashes all over the sky."

December 28th, Tuesday. — Weather clear, bright, and pleasant, but extremely cold. Minus 32°.

December 31st, 1880, *Friday.* — The last day of the year and I hope all our trials and troubles have gone with it.

The men had a celebration from eight to ten P. M. in the deck-house, very good minstrels and single acts making an acceptable programme.

THE CELEBRATED JEANNETTE MINSTRELS.

PROGRAMME.

PART I.

Overture	Orchestra.
Ella Ree	A. Sweetman.
Shoo Fly	H. Wilson.
Kitty Wells	Edward Starr.
Mignonette	H. Warren.
Finale	Company.

Intermission.

PART II.

The World-Renowned Aneguin, of the Great Northwest, in his original Comicalities.
The Great Dressler, in his favorite Accordeon Solos.
Mr. John Cole, our favorite Clog and Jig-Dancer.
Wilson, as the great Captain Schmidt of the Dutch Hussars.
Violin Solo. By George Kuehne (Ole Bull's great rival).

Intermission.

PART III.

Concludes the performance with the side-splitting farce of

"MONEY MAKES THE MARE GO."

Mr. Keene Sage	George Boyd.
Miss Keene Sage . . .	Miss Sharvell.
Charles Tilden, a promising young man in love with Miss Sage .	H. Leach.
Julius Goodasgold . . .	H. Warren.

Costumer, A. Görtz. Property Man, Wm. Nindemann.

JEANNETTE MINSTREL TROUPE.

PROGRAMME.

PART I.

Overture	Company.
The Slave	Mr. Sweetman.
Nellie Grey	Wilson.
What should make you Sad .	Boyd.
The Spanish Cavalier . .	Starr.
Our Boys	Warren.

PART II.

The Great "Ah Sam" and "Tong Sing," in their Wonderful Tragic Performances.

Accordeon Solo, by the Celebrated Artist "Herr Dressler."

Mr. Henry Wilson, in his Serio-Comic Songs.

Alexey and Aneguin still on the Role.

Violin Solo	G. Kuehne.
Ellagic Views	Mr. Sweetman.

PART III.

To conclude with the popular play

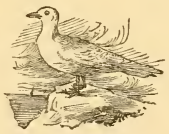
"THE SIAMESE TWINS."

Professor	G. W. Boyd.
Agent, in love with Professor's Daughter	H. W. Leach.
Professor's Daughter . . .	Miss Chicken.
The Twins	P. E. Johnson. H. D. Warren.

Friday, December 31st, 1880, "Star Spangled Banner" Company.

Everybody was bright and cheerful, and the performance closed by all hands singing the "Star Spangled Banner." For the sake of saying something cheering to the men, I then made a few remarks to the effect

that we were about to turn our backs on the old year and our faces to the new; that this cruise, like every event in life, might be divided into two parts, that which has been and that which is to be. During the past sixteen months we had drifted 1,300 miles, far enough, if in a straight line, to reach the Pole and beyond it; but we were only actually 220 miles northwest of where we were first beset; we had suffered mishap, and danger had confronted us often; we had been squeezed and jammed, tossed and tumbled about, nipped and pressed, until the ship's sides would have burst if they had not been as strong as the hearts they held within them; we had pumped a leaking ship for a year and kept her habitable; we were not yet daunted, but were as ready to dare as ever. We were all here, in good health, etc. We faced the future with a firm hope of doing something worthy of ourselves, worthy of the enterprise of the gentleman whose name was so closely connected with the expedition, worthy of the flag which floats above us, as by the blessing of God we would, and then we could go back to our homes, and with pardonable pride exclaim in the future, "I, too, was a member of the American Arctic Expedition of 1879."



The Kittiwake.

CHAPTER XI.

THE LAST OF THE JEANNETTE.

January — 9 *June*, 1881.

The Old Year out and the New Year in. — The Solid Snow. — Imprisonment. — Exercise. — Sudden Changes. — Reappearance of the Sun. — Increase of Daylight. — Dog Misfortunes. — Deep Soundings. — Aneguin's House. — Washington's Birthday. — Alexey's Sickness. — Bear Fight. — The Sick-List. — Sick Dogs. — Danenhower's Case. — The Chinamen stray off with the Dogs. — Search for the Lost Dogs. — The Wildness of Ice. — The Dogs on Short Rations. — Land! — Speculations about the Island. — Mr. Chipp on the Sick-List. — Lauterbach's Misfortune. — A Party sent to visit the Island. — Their Outfit. — Orders. — Lead Poison. — Return of the Party. — Report of Discoveries. — Henrietta Island. — Jeannette Island. — Anticipation of Trouble. — Sudden Disaster.

JANUARY 1*st*, 1881, *Saturday.* — I begin the new year in this book by turning over a new leaf, and I hope to God we are turning over a new leaf in our book of luck. The record on January 1st, 1882, "No greater advance toward the Pole, or toward the accomplishment of some other object worthy of consideration," would be humiliating indeed. I am, of course, thankful and grateful for our preservation in many perils, for our continued good health, and for our undiminished zeal and enthusiasm as manifested last night, when the men made the deck-house ring with their cheers at the end of my remarks, but I want to get on to achieve something to save us from disappointment and mortification.

Melville and Dunbar sat up with me to see the old

year out and the new year in. At midnight, when the men had finished a verse and chorus from "Marching through Georgia," eight bells were struck for the old year, three cheers were given for the ship, eight bells more were struck for the new year, and 1881 was thus officially inaugurated in the United States Arctic Steamer Jeannette, in latitude 73° 48′ N., and longitude 177° 32′ E.

January 3d, Monday. — A gale all day from east. The ship is buried up to her rail by the snow-drift, and wherever the deck was exposed large masses were piled there also. A low bank in the southwest horizon, which has remained there for two days, looked suspiciously like land.

Usual medical examination to-day and the doctor reports favorably, our general condition being even improved, though we never had anything to complain of.

January 4th, Tuesday. — The day began with a continuance of the gale, but it moderated rapidly after noon. The sky being cloudless we had excellent chances for determining our position; by meridian altitude, Jupiter, and time sights of Vega, we find we are in latitude 74° 8′, longitude 175° 32′ E., showing a drift of no less than thirty-eight and one half miles to N. 58° W. since December 31st. This is startling, for it shows more of a chance of getting along somewhere yet. We are very little south of our position of June 3d (74° 18′), which we attained after a steady drift during March, April, and May; and if we can only hold our own near this until the effect of the Siberian rivers can be again felt, we may get a push that will get us into open water, or at least navigable water. Soundings in thirty-two fathoms, rapid drift to W. N. W. being indicated by the lead line. The planet Venus showed at three P. M.

on the south meridian, about 2° above the horizon. It was a beautiful sight indeed. The refraction being considerable, she showed with remarkable size and dazzling brilliancy, while seeming to dance about with unrestrained joy. I take it for a happy omen.

The old crack, two hundred and fifty yards east of the ship, opened again to the width of one foot. Tracks of a bear were found nearly alongside this morning.

January 5th, Wednesday. — At three A. M. one would have believed we were in for a lively time. At 2.50 the ice seemed in general excitement, snapping and grinding, while the ship experienced several severe nips. The quartermaster was running into the cabin to report, but was met by Chipp on his way to make weather observations, so I was not aware of it. The quartermaster's impression was that everything was about to turn upside down. Chipp says the ice was cracking and grinding under his feet right alongside. In ten minutes all was quiet again, and when daylight came the only sign of any change was the closing together of the lead opened yesterday.

I anticipate from the falling barometer and increasing cold a S. W. wind before long. Anything that will favor us is much to be desired. I can see nothing to be gained by ranging along parallel to the Siberian coast, and something may be gained by working to the eastward. If patience and long-suffering, hope deferred and deferred again, anxiety and ambition, could give me foresight, how glad I should be, — perhaps, for after all the yet unknown future may be worse than the known present.

January 7th, Friday. — It would be very difficult for any one accustomed to the winters of the temperate zone to understand how hard the snow may be packed

by the action of the wind up here. The gale which we had some days ago, and which sent us spinning away to the northwest, played some curious freaks. It not only buried the ship to her rails, but it laid out the surface snow into long ridges sastrugi, which give our surrounding floe the appearance of a newly-plowed field. These ridges piled up in straight lines running to leeward and as hard as ice, and making walking difficult, lead me to many a tumble as I poke about with a lantern, reading thermometers, etc.

Our weary days drag along without novelty or change. Living mechanically as we do, no change or novelty seems possible. The wind having ceased to blow, we are zigzagging again, evidently; for our lead line showing us to-day thirty and one half fathoms, indicates also a slight drift to S. S. W. And so we go; the temporary hope that at last we are drifting somewhere was soon dissipated. So far as I know, never has an Arctic expedition been so unprofitable as this. People beset in the pack before have always drifted somewhere to some land, but we are drifting about like a modern Flying Dutchman, never getting anywhere, but always restless and on the move.

Coals are burning up, food is being consumed, the pumps are still going, and thirty-three people are wearing out their hearts and souls like men doomed to imprisonment for life. If this next summer comes and goes like the last without any result, what reasonable mind can be patient in contemplation of the future?

January 10th, Monday. — Another easterly blow, which causes the snow to fly in clouds again along the surface of the floe. Barometer falls rapidly from 30.46 to 30.09, and the temperature as quickly runs up to plus 6.5°, causing one to feel quite languid with the

heat. This sounds queer, but it is quite correct. So generally are we accustomed to cold, and warmly clad in consequence, that a change like to-day gives one a lazy, drowsy feeling not easily overcome. A range of 32° is considerable, and would occasion remark at any time at home.

January 19th, Wednesday. — One year ago to-day we had our serious trouble with the ice and received our injuries. Since that time the water has steadily come into the ship, and has been as steadily pumped out. Chipp kept a record of the number of pump-strokes to-day, and determines our leak to be 2,692 gallons for these twenty-four hours, or 112⅙ gallons per hour. Weather generally dull and gloomy until three P. M.; bright and pleasant thereafter. To-day at noon I could read the instruments on the floe without a lantern for the first time this year. At ten P. M. a brilliant aurora.

January 20th, Thursday. — A very cold day, but, owing to the absence of wind, not an uncomfortable one. I have made it a rule to suspend the enforced exercise from eleven to one whenever the temperature is below minus 30°, and in extreme cases of gales of wind have extended the suspension with warmer temperature. Though not enforced, the taking of exercise seems to be adhered to for an hour at least, under even these unfavorable circumstances. The thing is left to individual option. To-day, while the thermometer stood at minus 44.5°, officers and men were walking around on the floe as unconcernedly as if we had had a spring day common to the latitude of New York. It is a matter of congratulation thus far that we have not had a single case of serious frost-bite.

January 21st, Friday. — Another very cold day, and

being favored with very light southerly airs we are able to go about without much discomfort. One's feet seem to be the most vulnerable, particularly if standing still for any time. In spite of fur stockings and seal moccasins, the heat is drawn out rapidly and wasted on the ice beneath. As is usual with cold weather, we have considerable auroral display. But as these displays are carefully recorded in the meteorological log, I do not care to repeat them here.

January 22d, Saturday. — Position: latitude 74° 8′ N., longitude 173° 26′ W.

January 23d, Sunday. — A bright, pleasant day, but intensely cold (minus 47°). Light southerly and S. W. airs make outside walking tolerable, and for a short time even very pleasant, but the heat seems to gush out from one's nose and feet and bring one back to the realization that it is a winter's day. Towards bedtime Mr. Dunbar, on entering the cabin, announces in a grave tone that he "thinks there will be frost to-night," and after some consideration we all agree with him. Possibly people in New York are feeling cold at plus 32° (only 79° warmer than we are having it), — a temperature which used to remind us of the tropics last summer, and led to a search for straw hats. However, as philosophy considers no such thing as cold, but characterizes that phenomenon as a less degree of heat, we may merely consider our climate as not so warm as that of New York. I never think of phenomenon without being reminded of Melville's story of the Scotchman, who defined a phenomenon to his son Jamie as follows: "Gin you see a coo, Jamie, that's no a phenomenon; and gin you see a tree, that's no a phenomenon; but gin you see a coo climbing a tree backwards, that's a phenomenon, Jamie, that's a phenomenon."

An extraordinary feature is the marvelous height to which the barometer has risen. Beginning to-day at 30.55 it reaches 31.7 by midnight, and is not finished yet in its ascent. Something unusual may be anticipated with respect to the weather as a sequence to this state of things.

A bright red glow showed on the southern horizon at noon, and a warm red glow in southwest at three P. M., — welcome signs of the approaching return of our long absent sun. Already I have considerable daylight in my room at noon, — not enough to read by, to be sure, but still enough to enable me to do without my perpetual candle, and to look at the ghastly shapes of my furniture with a sense of pleasant relief to my eyes as I peer around me from my easy chair. Inspection and divine service followed our usual morning occupations. It would be endless repetition to say we have a perfectly dry berth deck and not a sign of drip.

January 26th, Wednesday. — One thing may be said of this winter which we could not say of the last, that if we have had plenty of cold weather we have also had some remarkable changes to higher temperatures. Two days ago we had minus 50° to contemplate, and now we are sweltering at 0 and above it. What these sudden changes may portend I cannot say, and what physical circumstances they may indicate I am in no position yet to affirm. But to my perhaps too sanguine imagination, it seems that if we have reached such a changeable part of the world we may reasonably hope for a different experience next summer than we had during its predecessor, and perhaps get adrift from these remorseless prison walls of ice that have held us so firmly for seventeen months.

The easterly gale begins with a velocity of twenty-

nine miles an hour, but rapidly moderates, and by midnight we have a stark calm.

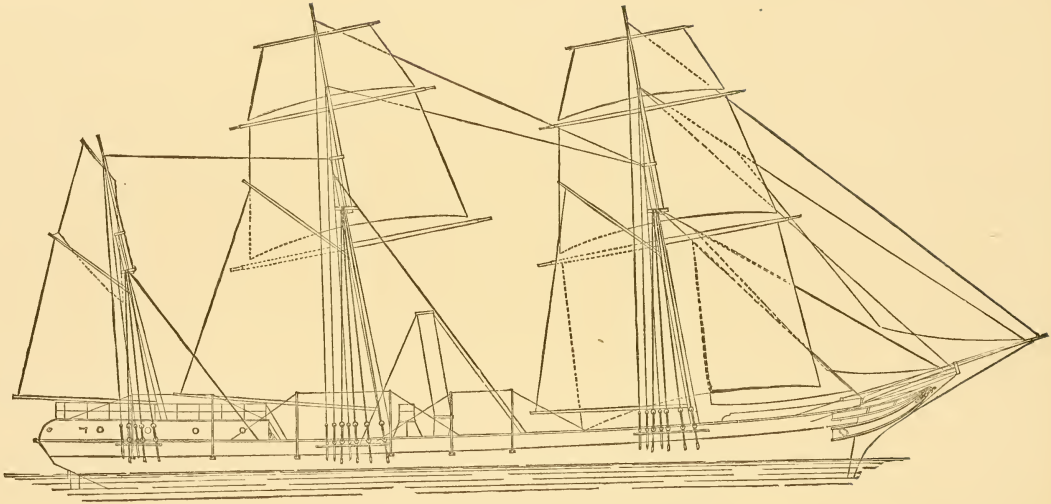
January 27th, Thursday. — Light southerly airs, position obtained showing a drift of thirteen and one fourth miles N. 20° W. since 22d. Latitude 74° 20′ 56″ N., longitude 173° 10′ E., — the highest latitude we have obtained in the nineteen months' cruising! Slow music!

January 31st, Monday. — Ice found by actual measurement to be five feet four inches thick by direct freezing since August 31st, and a gain of ten inches in the past month. As all our measurements are made by boring in a protected place, no increase of thickness is due to snow-drift freezing on the surface. We get the actual growth, and naturally all increase is on the under side.

It is worthy of note, that the upper half is much the harder. It is with great difficulty that the auger is got down, the ice offering as great resistance as plate-glass or rock, and the pieces broken out by the auger threads being as firm as flint. Through the lower half the boring is much easier, the ice seeming to be softer and more yielding.

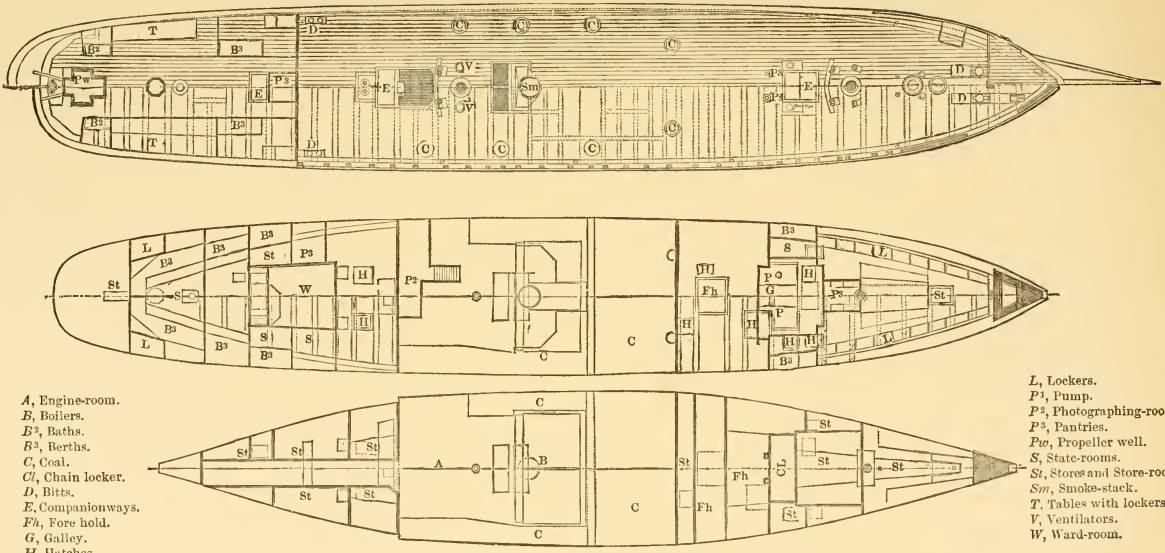
February 1st, Tuesday. — The first of the month brings the surgeon's examination if it brings nothing else. Dr. Ambler concluded the examination, and handed in his report. The condition of thirty-one of us is pronounced good, the remaining two (Danenhower and the cook) being in fair condition. The cook has nothing the matter with him, but is simply thin.

Taking advantage of a break in the generally prevailing cloudiness, Chipp gets a set of sights to-day by which our position is determined to be in 74° 39′ N., and 172° 25′ E., a drift since the 27th January of thirty-two



SAIL PLAN OF THE ARCTIC STEAMER JEANNETTE.

See Appendix F for notes upon the construction of Arctic steamers.



A, Engine-room.
B, Boilers.
B^2, Baths.
B^3, Berths.
C, Coal.
Cl, Chain locker.
D, Bitts.
E, Companionways.
Fh, Fore hold.
G, Galley.
H, Hatches.

L, Lockers.
P^1, Pump.
P^2, Photographing-room.
P^3, Pantries.
Pw, Propeller well.
S, State-rooms.
St, Stores and Store-rooms.
Sm, Smoke-stack.
T, Tables with lockers.
V, Ventilators.
W, Ward-room.

SPAR DECK, BERTH DECK, AND HOLD PLANS OF THE ARCTIC STEAMER JEANNETTE.

miles N. 33° W. This is our highest latitude thus far, but not the highest I hope for the cruise.

The gales and strong winds hold on with curious persistency. To-day it blows from southeast from twelve to nineteen miles an hour, while, strange to say, the barometer goes up steadily from 30.39 to 30.68, and the temperature as regularly falls to minus 13.5°. Under ordinary circumstances this would indicate a northerly wind, but there is no disposition to change.

My wind record for January is curious. Of the 7,644.8 miles of wind, 5,137.1 are from between east and south by east, and of these 2,892.2 are from east alone. Our experience since September, 1879, fails to show as windy a month. Our drift for the month ending to-day is ninety-nine miles N. 59° W., as against sixteen and a half miles S. E. for the same month last year. There is so much encouragement in these figures that I record them here. A bright red glow on the horizon at noon showed us where the sun had got in his effort to reach us on the 3d.

February 2d, Wednesday. — Still drifting rapidly, this time due north, and a marked increase in our soundings thirty-six fathoms. The old lead astern is opened to-day, and before ice can form Alexey and Aneguin go out to it and fortunately get a seal.

February 5th, Saturday. — Observations to-day place us in latitude 74° 49′, longitude 171° 49′ E., a still further drift of thirteen miles to N. W. I confess I am considerably disappointed, for, flattered by the increase of soundings, and the rapidity of drift indicated by the lead line, I was in strong hopes of finding our latitude to be 75°. We no doubt have been further north than 74° 49′, and are set back somewhat by the N. W. wind of yesterday evening, though our lead line to-day, in

showing forty fathoms, indicates no drift, and our lost ground cannot amount to much.

However, "Every cloud has a silvery lining," for, to console us, we had the sun on our horizon to-day at noon. The last time we saw it was on November 10th, 1880 (being then, as on the 9th, raised above the horizon at noon by extraordinary refraction), and our night has therefore been of eighty-seven days. It is worthy of mention, however, that the sun disappeared on the 6th of November, did not come above the horizon on the 7th and 8th, and that our night might fairly be called ninety-one days, as against seventy-one of last year. Well, we are all here, thank God, and as hopeful and reliant as ever. We all look more or less bleached out, and the doctor says we all look care-worn to some extent. But I do not think any men could lead the life we have led for seventeen months, of peril, uncertainty, disappointment, and monotony, without showing traces of its effects.

To-day we commenced with N. W. wind, but it backs, and grows light in so doing, until at midnight it is from east, and the temperature falls to a disagreeably low figure; though between nine P. M. and midnight it jumps up from minus 36.5° to minus 26.5°. I may say, however, with perfect correctness that the cold seems to affect us less this year than it did last, and though our night has been longer now than then, it has passed away with seemingly greater speed. I cannot explain the first fact, because it is contrary to general experience; the second, however, is easily accounted for by our exemption from pressures and ice movements. Last year we were never easy — jam, smash, jam, smash — until finally we had our stem sprung, and a leaking ship to care for and preserve. This year we have not

been disturbed at all. The doctor puts it very well when he says, "Last winter I went to bed expecting to be turned out, and was surprised that I was not; but this winter I go to bed expecting not to be turned out, and would be very much surprised if I were."

Our dogs have pulled through all right, but one having yielded to the superior force of sharp bones in his intestines. Though they are all lean and thin, I hope soon to get fattening food for them in the shape of bear meat. Bruin ought to leave his hibernation, and wander around by sunlight in quest of food, and follow the wind until he gets in our neighborhood. This winter we have fed our dogs on seal-blubber mixed with condemned oatmeal, which mitigates the effects which blubber alone might produce from its oily properties. The mixture steamed seems nutritious, and at all events has accomplished our purpose.

February 7th, Monday. — The days seem to increase in length like magic, — that is, the amount of daylight seems to spring to large proportions, considering that it is only two days since our sun came above the horizon. This morning at six o'clock low, bright dawn showed in the southeast; at 10.22 A. M. the sun commenced to shove his upper limb to view from deck; and at 1.10 P. M. he passed again from view. At three o'clock there was enough light in my room to answer ordinary toilet demands, though not enough for reading; but on the floe everything was bright and lively. Venus and the moon showed plainly, Jupiter and Saturn were barely visible in the broad daylight, and stars of the first magnitude not at all.

Accompanying the bright weather we had cold *ad nauseam*. As is usual when the temperature is decent, say between zero and minus 25°, the sky is generally

overcast, and the sensation produced is that of dullness; and when the weather is bright enough to be enjoyable the temperature is low enough to freeze the enjoyment. It is on these occasions that we confidently predict "frost to-night."

February 10th, Thursday. — I believe, upon mature reflection, the only thing of importance in to-day's existence is our learning of one of our dogs having had a tape-worm, and our proceedings to keep the article from being generated in other creatures, human or canine. About a week ago our little Russian dog Dan got rid of about eight feet of tape-worm, which it appears was carefully secured and bottled by Mr. Newcomb. Dan is now tied up, will receive no food for twenty-four hours, and then will be treated to a dose by the doctor, to insure a further installment or an exhaustion of the supply.

February 12th, Saturday. — Such curious weather as ours has been to-day deserves recording. We are evidently preparing for another blow such as we had on June 24th, 25th, and 26th, the barometer acting in a similar way. The temperature, however, acts differently. Then the coming wind was preceded by minus 44° to minus 49°, but it had pushed it up to plus 2° by the time it ended. Now the temperature runs up to plus 15.5° in anticipation. If the proportional increase remains the same, we ought to have ice melting around us before the coming gale ends. A year ago we had on February 12th between minus 31° and minus 39°, and an average for the day of minus 35.6°. Verily, verily, no two winters in the Arctic are alike.

February 14th, Monday. — It begins to look as if we were not going to have a gale after all. Position 75° 4′ N., longitude 171° 3′ E.; drift since 5th, N. 37° W.

nineteen three fourths miles. I have always felt that 75° would be our Rubicon, and now we have passed it, and may hope for better things. Soundings forty-four fathoms, a rapid drift to N. by E. Happy omen. Mr. Newcomb while out to-day noticed a piece of ice of this year's formation, he thinks, with icicles a foot or more in length, from which drops of water were ready to fall. These icicles were hanging from the south side of the piece of ice, and were sharpened to quite an edge southeast and northwest, as if cut by a blast of drifting snow during our late heavy southeast winds. The sun was about 5° above the horizon, the temperature of the air minus 9°. He brought a piece on board with icicles depending, and upon melting it I tasted some of the water, and found it unpleasantly salt, accustomed as I am to distilled water. The specific gravity proved, however, to be 1.0005, and that is fresher than anything we have seen thus far from sea-water ice. Now, as I am convinced that the continued consumption of just such water (if no worse) has had much to do with the heretofore unaccountable outbreak of scurvy in previous expeditions I am determined to bottle this specimen and take it home, as also a specimen of the distilled water such as we have used nearly always; and in America to submit the first specimen to medical experts for examination and analysis, asking these questions: "How long, under the peculiar conditions of life in the Arctic regions, could men habitually use that water without becoming scorbutic?" And, "Would it not be wonderful (or at least strange) if men continued to drink it and did not become scorbutic?"

February 15th, Tuesday. — The wind veered to S. S. W. and blew twenty miles an hour at six A. M., and

then veered away and grew lighter, so we cannot be said to have had a gale.

To our unspeakable astonishment the lead line gave fifty-seven fathoms, and a sticky mud at the bottom, with a very rapid drift E. by S. Can it be possible that we have left the Siberian shoals and are on the border of a Polar Ocean? I almost expected to see the ice melt! Our soundings were at ten A. M., and at 6.30 we established her position in 74° 59′ and 171° 57′ E., a drift since yesterday morning of fourteen and seven tenths miles S. 70° E. These occurrences make this a noteworthy day. Magnificent weather, sky absolutely cloudless after nine A. M.

February 16th, Wednesday. — Sunrise at 8.57, sunset at 3.05. The amount of sunlight we now get is very charming after such a long spell of being without it, and as our dawn light begins at six A. M. and lasts until six P. M., we are able to see enough day to make the night less wearisome when it comes. At my end of the mess-table we have had no artificial light at our three o'clock dinner, and I smoke my after-dinner pipe in a twilight that is conducive to enjoyable thinking. Before the sun had been so long with us last year we captured our first bear, but this year we have seen only fox-tracks thus far. In this part of the world at this season there can be no food for foxes, and they must depend on what Bruin leaves them from the hunting of seals. So as we see fox-tracks bears ought to be in our neighborhood.

February 17th, Thursday. — It is so long since we have seen a cloud that we nearly forget what it is like. A remarkable mirage prevailed all day. The horizon was raised all around like a solid wall resembling cliffs of a sea-coast. The hummocks, of course, made this

appearance, and it was not difficult to imagine a broad expanse of water at all points resting against the foot of these cliffs.

February 18th, Friday. — This morning, between ten and eleven, Danenhower (who is now able to get a bit of sun and fresh air occasionally), while walking in the trench under the port quarter, saw a bear close to. He gave the alarm and away went the dogs pell mell, headed by the "hoodlums," and, overtaking Bruin, fought him and killed him before anybody could get near. Tom and Alexey's dog got the bear by the throat and held him while the rest of the pack sailed in. When the carcass was brought alongside it really looked like that of an overgrown cat, it was so small. She (for he was a she) was only five feet six inches long, two feet two inches high, three feet two and a half inches girth, and weighed only one hundred and twenty-nine pounds. Wilson easily tossed her on his shoulder and carried her in. We suspect from her small size and poor condition that she is the survivor of the family of mother and two cubs we fired at and wounded August 26th. Our theory is that mother and one cub died from their wounds, and the survivor has hibernated near us all winter.

When Aneguin came back from his cruise this afternoon he astonished us considerably by the news that he had found a "house" big enough for two men to live in about two miles southeast of the ship. I think he was considerably frightened at his find, and looked upon it as something uncanny. By close questioning it was elicited that the house was of canvas, that it had a piece of brass served in it; and then it occurred to us that he had found a piece of tent-awning we had left behind in the smash up November 25, 1879. The

"piece of brass served in it" meant a brass eyelet, one of a number along the edge for lacing. Though many times since we have hunted for our old resting place, it has remained hidden. Chipp will go out to-morrow with a sled and bring in the valuable relic. Another absolutely cloudless day, except for a suspicion of stratus clouds seen by the doctor at three A. M.

February 19th, Saturday. — Our anticipations of yesterday with respect to the house which Aneguin found have been verified. Chipp went out this morning and brought the trophy into the ship. He found it about three miles southeast of the ship, and in a location which gave evidence of about six feet of the surrounding ice having melted last summer. Nothing was found of two barrels, which, being empty, were not looked after when we broke away.

February 20th, Sunday. — The bright sunlight seems to make us forget that we have gone through anything in the past, and makes me at least hope implicitly in a successful future.

February 22d, Tuesday. — Washington's birthday, and celebrated by us for the second time north of the Arctic Circle by mast-head and flagstaff ensigns and the jack forward. With all patriotic solemnity we hoisted them at sunrise and hauled them down at sunset, and "another of them was gone." A bright, cold day; temperature, minus 40.5°.

February 23d, Wednesday. — Bright and pleasant weather, and the cheerful temperature of minus 42.5°. Light airs from southward and westward, then a calm; and afternoon a light breeze springs up from the eastward with which the temperature rises, and I hope will continue to rise, for I do not want our good average for February to be spoiled.

February 24th, Thursday. — Another instance of extraordinary change of temperature in twenty-four hours. Yesterday we had minus 42.5°, and to-day we get minus 1°! Who wants more than that to make him happy? A fine easterly gale, however, explains the warmth. Although the clouds of drifting snow threaten to bury us as usual, we are somewhat surprised at having good large flakes fall at nine P. M.

February 25th, Friday. — A gale blowing all day from E. S. E., and temperature steadily falls to minus 14°.

I am strangely inclined to think that we are skimming along close to the line of comparatively deep water, and while making some northing are making more westing, agreeably to the shape of the coast line of Siberia, and that when the ice in these rivers breaks up we may be shot out to the northward far enough to get into water sufficiently deep to give these floes a chance to break up and expose some navigable lanes. *Nous verrons.*

February 26th, Saturday. — Latitude 75° 11′, longitude 170° 31′ E., a drift since the 19th of seventeen and three quarter miles N. 56° W. The E. S. E. gale continues twenty-six to twenty-one miles an hour until noon, and after this it moderates, and by midnight has backed to E. eleven miles an hour. The temperature rapidly falls as the barometer rises, and the clouds clear away so that after three P. M. we have an absolutely cloudless sky.

February 27th, Sunday. — I am sorry to record that Alexey is on the sick-list with an annoying trouble. A cicatrice has opened on his leg, having been irritated and inflamed by the tight lacing of his moccasin, — a regular habit with him, — and has become an ulcer of

some magnitude. Apart from the laying up of a valuable hunter, and the additional care to be employed in nursing one more sick man, as well as the constant dread of having to look after two men now instead of one should disaster overtake us, there is created a cause, though not, as we can prove, a reason, for a suspicion hereafter that we were not free from scurvy, much as I have taken pride in our exemption all along. From Alexey's imperfect knowledge of English, and our entire ignorance of his language, the doctor cannot get an exact account of his medical history. But as far as can be ascertained, he had some disorder at St. Michael's which Mr. Newman treated, and from Alexey's description of the effect produced, his hair falling off, etc., it is likely that Mr. Newman dosed him with mercury. At all events, Alexey had at that time several of these sores, one of which, thanks to his tight moccasin lacing, has turned into an ulcer.[1]

The probabilities — in fact, the certainties — are that the man was never so well cared for, so regularly and properly fed, so comfortably housed, and so little worked in his life as he is now; and in any other place than this his condition would not suggest even a suspicion of scurvy. But, as heretofore, the idea of an Arctic expedition was always inseparably connected, seemingly, with scorbutus; the fact of this one escaping it entirely would be received with more or less incredulity. Accordingly, the occurrence of this ulcer on Alexey's leg is peculiarly annoying.

The usual Sunday inspection and divine service.

[1] This statement must be corrected. Subsequent inquiry shows that Alexey had these sores before he came to St. Michael's, and was treated by his uncle, who applied pulverized whalebone, etc. He was afterwards treated at St. Michael's with mercury for another disorder, and the original ulcer business and its cause may have been unknown to Mr. Newman.

February 28th, Monday. — We had some little disturbance to-day in the jarring of the ship at one, eight, and nine P. M., and the frequent snapping and cracking of the ice. After so much E. and S. E. wind, I suppose some slack place has been made in those directions; and as we have to-day fresh N. W. winds, a closing up has occurred, which would explain the disturbance. Some snow and fog indicated openings in the ice in our neighborhood, and the barometer and temperature readings were in accordance with such changes going on. Soundings in thirty-nine fathoms; moderate drift S. This is unpleasant, for I want to hold on to our latitude until I can get some good out of the Siberian rivers, to wit: pushing us and our ice to the northeast to deeper water where this summer we may hope for a release.

By measurement the ice around us was found to be six feet thick, direct growth since August 31st.

March 1st, Tuesday. — The medical examination being concluded to-day, the doctor handed in his report. It is, on the whole, satisfactory. Six are in good condition, and two (Mr. Danenhower and Mr. Dunbar) fair. All hands forward are in good condition except Alexey, and his condition is fair. The doctor reports that a want of tone prevails; that is, we are not as vigorous and could not stand exposure and prolonged muscular exertion as we might have done when we first reached the ice. As far as Alexey is concerned, the views of the doctor and myself are fully set forth on the preceding page. To-day we have a moderate northerly gale.

March 6th, Sunday. — A bear of 374 pounds weight was captured to-day after a most tremendous fight. At about eight A. M. he came up from astern, and when about five hundred yards distant was sighted by the dogs, about twenty of whom made for him and brought

him to. He took to a hummock to have a commanding position, and there the dogs charged him, while Nindemann and Wilson hastened to the scene with rifles. He fought tooth and nail, and flung the dogs off right and left with many a cut and scratch. Chipp saw the fight from the deck-house, and says that when the dogs charged the fur would fly, and then a dog would be sent through the air, torn and repulsed. When the men came within range Nindemann fired, the ball passing through the bear, glancing against some bone, and, to our great sorrow hitting poor Plug Ugly, entering his lungs and causing death. It was not until Wilson fired that Plug Ugly fell, and it was at first supposed he was killed by Wilson's shot. But our usual post-mortem showed a flattened Remington bullet in the dog's lungs, and the entrance and exit of the ball were found in the bear's carcass. Wilson's piece was an English rifle.

When injuries came to be examined, we found it a very costly bit of bear. One dog killed, Plug Ugly; Prince with his back and fore shoulder cut, where Bruin had caught him in his mouth and flung him; Tom had a long gash on his rump, which had to be sewn up; and Wolf, the third hoodlum, had a long cut from his rump to his stomach, requiring considerable sewing. Bingo was torn in his side in two places clean through to the intestines, making plenty of stitching necessary. One of Alexey's dogs had a gash in his throat from the claw. Snoozer had his mouth lengthened by a claw on the cheek. Smike was torn in two places, and cuts of less importance were more common. Such a fight we have never had. The bear was seemingly a mother of recent date, for she was plentiful in milk (in fact, smaller tracks were afterward found alongside her trail), and quite fat and otherwise in good condition.

Ordinarily they do not fight much, generally jumping around and around to keep face to the dogs, but this one had her war paint on with a vengeance.

Something is getting ready for a move, for three times to-day, seven A. M., two and four P. M., the ship was heavily jarred, and the grinding and snapping of the ice occurred alongside of us, though nothing could be seen.

March 8th, Tuesday. — We have had a screamer of a S. W. gale all day. Away we flew to the northeast, our soundings deepening to thirty-six and one half fathoms. What little was left visible of the ship on her starboard side was promptly buried by the clouds of drift, and we looked like three masts rising out of a snow-bank; even the decks were piled up, and one had to climb over the snow barricade that the wind had heaped up against the porch door.

March 10th, Thursday. — A light S. W. breeze and steadily increasing temperature. Just as the wind changed, at three P. M., the ice commenced to jar the ship. The sound of our going over some underlying pieces was apparent, and considerable strain seemed to be received. Five hundred yards east of the ship a long crack occurred running north and south, and the ice beyond immediately commenced crowding in, breaking up edges and piling a ridge all along its length. This advance looked something like our old experience of November, 1879.

March 11th, Friday. — Our days are steadily lengthening. At nine to-night the twilight arch was distinct above the northwest horizon. At midnight brilliant flashing of an auroral mass of curtain segments west between horizon and zenith. At the same time I remarked what I have frequently heard before, noises

from the ice all around me like the singing which a whiplash makes in cutting through the air, or a noise produced by switching a rattan.

March 12th, Saturday. — Latitude 74° 54′ N., longitude 171° 16′ E., 320 miles northwest of Herald Island, — a drift since the 5th of ten and one half miles N. 80° E. The temperature remains uniformly low and minus 43°. Sunrise, 6 h. 18 m.; sunset, 5 h. 25 m.; early dawn, three A. M. — northeast; last twilight, nine P. M. — northwest. Considerable fog along horizon from nine A. M. to six P. M. The ice five hundred yards southeast of the ship got under way between six and eight A. M. and made quite a disturbance, and between noon and one P. M. the screaming and grinding commenced ahead. This motion of the ice, after our long quiet of over a year, is incomprehensible, unless by some happy chance we are as close to the northern edge now as we were to the southern edge then of a great icy barrier.

March 13th, Sunday. — Sunday comes in the ordinary course of events, and finds us still here or hereabouts. Inspection is made as a matter of routine, for things do not change much from day to day. The holds and store-rooms are showing large holes, and our provisions are steadily diminishing, with nothing to show for the consumption. We have been an expensive Arctic expedition in view of the results, for, like unworked horses, we have "eaten our heads off and have accomplished nothing."

Divine service followed at 1.30. As an evidence of our vagaries in the Arctic we have taken to flying kites, Chipp of a scientific kind for electrical effects, and the Chinamen of a fancy kind for their own amusement, and in their enjoyment of the fun they amuse the whole ship's company.

March 14*th*, *Monday*. — Surprised by sounding to-day in fifty and one third fathoms. Our position is found to be in latitude N. 75° 5′, longitude E. 171° 36′, showing a drift since the 12th of twelve and three quarters miles N. 28° E. Temperature minus 43°. Dug away snow from the port rail amidships, to enable us at least to see over the ship's side, — something we have long failed to do.

March 15*th*, *Tuesday*. — An unusually bright and pleasant day, but very cold, minus 45°. By counting the stroke of our bilge-pump for twenty-four hours we determine the amount of our leak to be two hundred gallons per hour.

March 16*th*, *Wednesday*. — Astounded to-day by getting sixty fathoms of water, the deepest yet obtained by us north of the Aleutian Islands. By the sun at noon, we find we are in latitude 75.7°, and by Venus at 8.30 P. M. we get our longitude 171° 48′ E., showing a drift since the 14th of N. 59° E. 3 miles.

It is worthy of remark that the increase in depth is abrupt. On the 13th we had thirty-eight and one half fathoms, and on the 14th fifty and one half fathoms. Yesterday we had forty-six fathoms, and to-day sixty. I think the water to the northeast will be deeper the further we go, and my prayer is that we may go on until we come out into the Atlantic Ocean.

March 17*th*, *Thursday*. — The wonder is increasing. Sixty-seven fathoms to-day, and a slight drift N. E. May it keep up and increase in rapidity until we come up into the Atlantic very early in the summer. A mysterious disappearance of one of our dogs, Skinny, is now to be mentioned. He has been growing thin so regularly since he first came to us that of late there has been but the frame of a dog visible. Now he cannot

be found, and it is supposed that he has wandered away somewhere and become covered with drifting snow and thus buried. He never would have been of any use to drag a sled, but still it is unfortunate that his end should have occurred in this way.

The cheerfulness and persistence with which our two Chinamen attend to flying their kites would lead one to suppose that they were on green, grassy fields at home. They make them of all sizes and all shapes, — like flies, like birds with wings, etc., — and as long as there is daylight they are out on the ice enjoying their sport. When work requires their presence in the galley or cabin they tie the kite-string to a boat davit, and leave the kite flying until they can run out again to watch it. I verily believe they would cheerfully tear up all their clothes to make kite-tails of.

March 18th, Friday. — Soundings in sixty-six fathoms. Sunrise at 5.38, sunset at 6.10. Our sick-list to-day received another addition in Dressler, who dislocated one of the bones (os magnum) of his right wrist. While he had his arms full of provisions, carrying them forward to the berth deck, he attempted to open the deck-house door, and in so doing sustained the injury. It will lay him up for a week, but beyond that there is no reason to be concerned.

Alexey is improving, I am glad to say, his ulcers granulating all right. There is no reason to suspect any scorbutic taint in his case.

Danenhower pulls along just the same, sometimes better and sometimes worse. There is no reason to hope for his improvement until he can be operated on ashore, and no reason to fear unless we should be turned out of the ship and he should fail to stand the exposure and hardship of ice life.

March 19th, Saturday. — Soundings in seventy-one fathoms. Slight drift to N. Observations place us in latitude N. 75° 15′, and longitude E. 171° 36′, a drift of eight and one half miles N. 20° W. since the 16th.

Yesterday I had occasion to speak of sick men and to-day I mention sick dogs. Poor Tom received a severe hurt in the memorable bear fight, for to-day the doctor got a piece of broken bone out of his back, and it would seem that Bruin must have taken him in his mouth and bitten deep before flinging him to one side. It will be a long time before Tom is on duty again. Wolf is mending slowly, his injury giving him a strong disinclination to sit down, however, but this is favorable to his improvement. The other dogs are also improving. Smike was succeeding, by judicious management, in keeping his wound open, but Wilson made him a one-legged pantaloon and clapped it on him, and now Smike is so proud of his clothes that he has forgotten all about his injuries.

March 20th, Sunday. — To-day the sun crossed the line coming north, and I hope he will see us out of all our trouble before he crosses it going south. He showed that we are in latitude N. 75.17°, and that is some comfort.

Inspection and divine service mark this day above others.

March 21st, Monday. — Soundings in sixty-eight fathoms, and an indicated slight drift to N. W. Every time we go northeast we deepen our water, and shoal it when we go northwest. When a good depth consoles us, a light wind sets us west again, and thus heads us off.

This morning we found a track ahead of the stem, and one leading astern, as if our floe were split in a line

with the keel. At the same time we noticed that our snow walls were an inch or two away from the sides, as if an opening and spreading outward were about to occur. We can but await developments, as we did in the fall of 1879, for I have long since ceased to build any castles in the air on probabilities or possibilities.

March 22d, Tuesday.—The doctor communicated to me to-day some matters in relation to Mr. Danenhower's case, which I consider proper to enter here at length. The doctor considers that the diseased eye is in such a condition that no improvement will take place in it unless a very serious operation is performed, though no assurance can be given that this operation will be successful. Still, under favorable circumstances of surroundings, appliances, and hospital treatment the operation would be considered advisable, and no hesitation would be felt. Here, however, the situation is unfavorable. The doctor has no proper instruments in the first place; and finally, if any mishap should occur by which we were turned out on the ice without a ship, the eye would be in a worse condition and would suffer more than if let alone. For as it now is, it can be kept at least from growing worse. Danenhower can see with one eye, the right; is in fair physical condition; is not absolutely helpless; and, in the event of disaster, stands a better chance of safety than if he were disabled by an operation of which the ultimate benefit is more or less doubtful. I have no hesitation in approving the doctor's views, and in asserting that Danenhower's case is best dealt with in leaving it judiciously alone.

It would be difficult to find a more perfect day than we have had. Light airs, clear sky, a bright sun, and hard, firm walking, go to make up an Arctic Paradise. So bright and warming was the sun that the tempera-

ture, minus 39°, was forgotten ; and after walking long enough to get the blood in circulation, such a glow of heat was felt as tempted me to throw off my fur coat and continue without it. I did not do it, however, for no doubt I should have had my enthusiasm cooled. I see very clearly we shall have to come back to snow spectacles before long. Such a dazzling diamond dust as the floe presents under the action of the sun's rays is too trying for long endurance. And yet the sun has only 15° or so altitude. Sunset 6.39, and considerable daylight even at midnight.

When the air is perfectly dry, and the sky cloudless, the intensity of the sun's rays, even in these low temperatures, is wonderful. In fact, as we can have a dryness of atmosphere here that is unusual in the tropics, except in deserts, the sun's heat may be more uncomfortable here on the same day than in places much further south, though in the latter case the temperature shown by a thermometer may be as much above zero as here it is below. It is a fact verified by our experience that we have had a greater sensation of cold in the summer, when dampness and fog are common, than in the winter, when the atmosphere was dry, although in summer the temperature was from 30° to 40° plus, and in winter from 30° to 40° minus.

March 23d, Wednesday. — This month seems to hold on with cold weather very steadily, still minus 39°. We had very much warmer weather last year at this time, though of course it should be remembered that we have not had as great a degree of cold at any one time this year as last. However, the air was so dry, the breeze so light, and the sun so intense that we do not complain of to-day, for it has seemed delightful. With the sun above the horizon for fourteen hours, strong twilight

for six hours more, and even a dawn light at midnight, we can no longer be oppressed by darkness. It is so hard to realize that we are unable to go ahead. What would we care for labor if we could only accomplish something by it? Nineteen months of inactivity and failure is a long time and a severe trial, but I am satisfied we have all the zeal and energy needed to make a dash when we are given the chance.

March 24th, Thursday. — Soundings in sixty-four fathoms, light drift W.; it is again evident that the deep water is northeast of us.

March 25th, Friday. — Dressler has so far regained the use of his wrist as to be returned to duty. But as I am quite convinced that Chipp is overworked, and as he looks wretchedly thin, I have directed him to discontinue taking three A. M. meteorological observations, and I shall hereafter take them myself.

March 26th, Saturday. — And thus do we drag our weary length along, and seemingly no nearer a success. Is there never to be a change to this simply horrible monotony? Soundings to-day in sixty-one fathoms; slight drift W. S. W.

March 28th, Monday. — Latitude 75° 27′ N., longitude 170° 26′ E., and a drift since the 19th of eighteen miles N. W. We are to-day 350 miles northwest of Herald Island. As may be seen we have, for some days, been having cold mornings and evenings, and considerable rises of temperature in the middle of the day. It may be that the winter is breaking up, or, poetically speaking, "lingering in the lap of spring."

We have been quite excited to-day about ice openings. At six A. M. masses of dark vapor were rising in clouds from north northwest. Around by north to southeast and from aloft a very large opening could be

seen. Toward four P. M. another opening occurred in the southwest, and the old lead one eighth of a mile astern (north) opened also. All the hunters were out, of course, and made for the water. But three seals were seen, too far to shoot at, and no bear-tracks. By using a glass from aloft, ice could be seen across this large opening to the northward. So we were not on the edge of an open sea, as we might have hoped. Generally speaking, however, the ice is full of small cracks, and it seems as if a good southwest blow would send it streaming away to the northeast without any difficulty, and getting these fields into deep water break them up, and so allow us a chance to get our poor ice-ridden ship under way. We had quite an alarm about Wilson, who, accompanied by his satellite Smike, started off at the first sight of water. Not coming back by six P. M., though the recall had been hoisted for two hours, Ericksen and Starr were dispatched in search of him. Eight P. M. came and no Wilson, and I was about to send out large parties in various directions, when the man arrived with Smike. We had next of course to send for Ericksen and Starr.

Wilson had crossed a crack before it opened, and on his way back he found himself headed off. Consequently he had a five mile walk over rough ice, until somewhere on our starboard quarter he could get across and make his way home.

March 29th, Tuesday. — As if by magic every ice opening of yesterday is closed to-day, and not a drop of water is to be seen. A light N. E. breeze veers to E. N. E. and to S. E., and the ice is all solid again. To the southwest of us it came together with some force, for a ridge of broken lumps marks the line of closing.

April 1st, Friday. — Our spring and summer routine

goes into effect to-day. But one item needs especial mention, and that is, "watch below to go hunting." This, it will be observed, insures every man going on a hunt once a day, and, incidentally thereto, the securing of enough exercise to prepare him somewhat for possibly greater exertions.

April 7th, Thursday. — Seventy-two fathoms, and a rapid drift N. N. E. The faster the better, for I am convinced we stand a better chance of breaking out of our ice-prison by getting into deep water. Having finished breaking the ice out of the store-room, we now turn our attention to the deck-house, from which the frost deposit is scraped by bushels and carried away in wheelbarrows.

April 8th, Friday. — Seventy-five and a half fathoms; still deepening, and a slight drift S. S. E. Latitude 75° 46′, longitude 169° 57′ E. A drift since the 5th of eight and three fourths miles to N. 18° E. At six P. M. the ice commenced to open about two miles west of the ship, and by nine P. M. the opening had extended in an irregular curve around by north to northeast, and the condensation caused a thick fog. The water could be plainly seen from the deck-house about two miles distant, the width of the opening varying from a few feet to one hundred and fifty yards. At midnight, however, the opening had closed and a small one had occurred to the southward. The ship received several severe shocks at midnight, presumably caused by the floes coming together.

April 13th, Wednesday. — Eighty-five and a half fathoms, and a slight drift S. S. W. So we go north one day, south the next, until man's patience and endurance almost give way. Is there never to be a change? Dull and gloomy weather, much fog, and water-sky.

April 14*th, Thursday.* — An opening occurred in the ice about five hundred yards ahead of the ship, and extended in an irregular curve around her bows for several miles. Bear-tracks were seen, and one seal was brought in. As this is the time of full moon, the question again comes up are these ice openings due to tidal action?

April 15*th, Friday.* — Eighty-two fathoms; moderate drift N. W. Latitude 75° 52′ N., longitude 169° 56′ E., — a drift since the 12th of ten and three fourths miles to N. 68° W. Evidently the slack water or slack ice exists to the westward, for we go so readily that way. Another dog dead, I am sorry to say. Dan, the dog who obligingly furnished a tape-worm to our collection, has departed this life, and we now mourn his loss. By measurement to-day in the most accurate manner, we find the ice to have attained a thickness of eighty-four inches direct freezing since August 31, 1880.

April 16*th, Saturday.* — Evidently we have not got over winter yet (minus 26°), and I must say it is a discouraging realization. This is worse, by long odds, than last year, and does not promise one half as much.

Eighty-four fathoms; slight drift W. N. W. Latitude 75° 53′ 30″ N., longitude 169° 45′ E., — drift since yesterday N. 53° W. three and one fourth miles. "Westward ho!" and "Go West, young man!" are clearly applicable to us.

April 19*th, Tuesday.* — Occasionally we have something to excite us, but unfortunately it is not pleasurable excitement. To-day the steward and cook started off at 2.30 on their walking hunting exercise, but did not come to time when the usual recall was hoisted at five P. M. For one result, we in the cabin were for a

long while without supper. Finally, at 7.30 P. M., the steward came back alone and greatly excited, his explanation being such a confused account of bears, dogs, cook, and guns as to bewilder us completely. When he calmed down, we managed to get at the following: "He left the ship with the cook and one dog, went off to the westward, and at one half mile distance saw a fresh bear-track. While following it up, and going over young ice six miles from the ship, saw Prince and Wolf on a hummock; then saw a bear. Steward fell down among some rough ice, and a piece fell on his back and held him down, else he would have shot the bear (?). The cook's gun would not go off. Cook got the ice off steward's back, and helped him up. They both ran three or four miles after the bear and dogs; then saw the bear again standing on a hummock and fighting the dogs. Cook's dog came back upon being called. Bear was too far off to shoot. Cook then said, 'It's about six or seven o'clock; you go on board and cook some supper.' So steward came back alone, while cook kept on. Was out of sight of ship, but after coming back one half mile got on hummock and saw a little bit of mast, and so came in, seeing another (?) bear-track. Knew he should not have disobeyed order about not going out of sight of the ship, but thought he ought to kill that bear and save the dogs." Of course, I was anxious now about the cook. To send to look for him was like looking for a needle in a haystack. No direction could be selected, because a bear chased by dogs, chased by a cook, would no doubt be too much pressed for time to adhere to a compass course, and as the wind was blowing the surface snow along in low clouds every print would soon be filled up. So nothing was left but to wait. At midnight along came the cook with but

one dog, and he was exhausted. I made him drink a half tumbler of whiskey the first thing, and then questioned him; but he was so excited, or tired, or frightened that he immediately commenced to cry, and I packed him off to bed.

When he became calm, his story agreed with the steward's, and supplied the following additional details: He found a seal, which the bear had been eating, minus its head and shoulders. The bear and dogs would fight every now and then, and the dogs were bleeding. Thinks he went fifteen (?) miles away in chase before he gave it up. Prince and Wolf were still following the bear when he saw them last. Cook tried to drag the seal in, but was too fatigued, and had to give it up. Knew he should not have gone out of sight of the ship, but felt he ought to get the dogs back.

So, as the case stands at midnight, two of our best dogs — in fact, our two best dogs — are missing. Wolf is barely discharged from the sick-list before he is again on the war path. A very curious feature of the whole business is that no one took these two dogs away with him, and our assumption is that Prince and Wolf must have seen or scented a bear, and have started off on the hunt on their own account. Fortunately Tom, the third of the gang, is not out of the hospital yet, and seldom is let out of the deck-house, and never unaccompanied, or we might now be lamenting the loss of three dogs instead of two.

April 20th, Wednesday. — Immediately after dinner, Ericksen, Wilson, and Dressler, accompanied by dogs Smike, Snoozer, and Kasmatka, started off on a search for our missing dogs, but came back about 8.30 with no success. They found the tracks and followed them about ten miles, and, singular to say, the bear seemed

to have come down to a walk, with a dog on each side of him. Possibly all three were so fatigued that they had declared a temporary truce. I say the men followed the tracks for ten miles, but double that distance would be nearer the distance traveled. When they started to return, they were as far as that in a straight line from the ship. The ice at that point was all in motion, grinding and groaning to a fearful extent, and Ericksen, obeying orders, ran no risk of being cut off. The tracks were still visible, showing that the bear and his two satellites were continuing south. At 7.05 P. M. the ship received a jar as if striking in going over a submerged piece of ice.

April 21st, Thursday. — Latitude 76° 2′ 34″ N., longitude 167° 45′ 30″ E., — a drift since yesterday of ten and one half miles to N. 53° W. My courage is all aroused again, for if we go on now, as seems not improbable, we may accomplish something yet. A gale is blowing from east all day, and with no sign of a let up. Soundings in eighty-one fathoms, and a rapid drift indicated W. N. W. Herald Island is now 400 miles S. 43° E. from us. I hope our two missing dogs have not gone to look for us there.

April 25th, Monday. — A clear, bright day, and I am enabled to get good sights for position, with the following result: Latitude 76° 19′ N., longitude 164° 45′ E. A drift of no less than forty-seven miles N. 69° W. since the 21st. This is the greatest drift we have yet to record, and though 147 miles would be more satisfactory I cannot complain, though I hope the time is not far distant when 147 miles will be an ordinary day's work.

So much theorizing has been done this cruise, that one more theory will not be amiss, namely, that the

New Siberian Islands are acting as the breakwater or stop to the regular onward flow of the ice. If we can get well to the northward of their position we may come to more water spaces, and have better chances of navigation, and so work our way afloat. After such long waiting we surely have earned some reward.

Soundings in thirty-five fathoms, rapid drift S. W. by W. It is not very encouraging. E. N. E. to N. N. E. represent our winds. A disgusting state of temperature for this time of year. At nine P. M. zero again stared me in the face, and at midnight minus 6° was as calmly registered as if it were a temperature to grow roses in. What a country this is! It would be difficult to make anybody understand what a dreary waste of ice surrounds us. We are so accustomed to it that its monotony is its only disagreeable feature generally; but at times its wildness strikes deep into us. One can go aloft and thus extend his horizon, but he only adds to the amount of wild scenery. Nothing but ice, day after day. Hummocks large and small, ridges high and low, a rough, tumbled mass over which there is no path, and through which there is no road, and in the centre of the picture a poor little ship buried to her rails in snow-drifts, — a stranger in a strange land, indeed! As day adds to day the sameness becomes wearing, and after our long experience of it, it is perfectly maddening. Sun above northern horizon at midnight.

April 26th, Tuesday. — The most marvelous thing to-day was the return of our dog Prince at six A. M., very thin, and evidently exhausted. He has been gone within a few hours of a week. What has become of his companion Wolf, we know not; though, if Prince could speak, no doubt he would tell us a story of adventure and suffering. Our presumption is that Wolf

was badly hurt by the bear, and that Prince stayed by him until he died. It would not surprise us, however, to see Wolf come straggling along yet, but judging by Prince's condition he had better not defer his arrival much longer.

April 27th, Wednesday. — For the first time we get some diatoms in our Sands cup, and of the order coscinodiscus. As these things are supposed to be a river growth, it is fair to presume that we have just come within the area of the deposits from the Kolyma River. Let us then hope for something from the much lauded velocity of the spring freshets of Siberian rivers, for that is about the only Arctic theory that we have not exploded.

April 30th, Saturday. — Ice found to be seven feet six inches in thickness, direct freezing since August 31, 1880.

May 1st, Sunday. — The month of May enters promisingly, indeed, — a temperature of minus 2° being a cheerful indication of future spring; for I suppose I am not very far wrong if I consider we are yet enjoying winter. At five P. M. we got a sharp shock under the stern, and soon after we found the ice open about one hundred and eighty yards from the ship, and running in an irregular bow-and-quarter line as far as we could see it through the rough ice. It gave a chance for Chipp to make some interesting measures of ice thickness which I put in my general items book.

May 2d, Monday. — Surely in no other place in the world north of the Equator have I heard of a temperature of minus 10° on the 2d day of May.

May 3d, Tuesday. — In a little book called "Reindeer, Dogs, and Snowshoes," there is a remark that in Siberia there is no spring — the transition from winter

to summer being abrupt. We must be having Siberian weather, for how else can we account for a temperature of minus 12° on the 3d day of May? Our men to-day were at work clearing away the snow-banks surrounding us. The drifts have almost buried us, and we are anxious to see our black sides once more. Shall we ever see them above the surface of an open ocean again?

May, 4th, Wednesday. — A flock of ten wild geese were seen flying west this morning, and some ducks also flying in the same direction in the afternoon.

May 5th, Thursday. — The pleasantest thing I have had to record for some time is an occurrence of to-day — the capture of a bear. This morning, while the men were out on their usual walking and hunting exercise, Wilson and others saw a bear about a mile ahead of the ship, and our fine dog Prince at once made for him and seized him by the hind leg. Bruin promptly wheeled to confront his assailant, when, according to Ericksen, Prince shot ahead of him cutting off his line of retreat until Wilson, one hundred yards distant, got a bullet in that dropped him. A splendid shot, and a piece of great good luck for us. Weight 790 pounds; his stomach was empty but for one tobacco quid picked up on his way.

May 6th, Friday. — At one and four A. M. the ship received some severe shocks, and in the forenoon, when we came to look around, we found that the lead, one hundred and eighty yards off, had partially closed; that a crack extended ahead in line with the keel; one from our starboard quarter toward the one hundred and eighty yard lead, and several between the bow and beam on the starboard side. Not of importance any of them, unless as indicating a future line of opening. A flock of ducks flying west seen to-day.

May 7th, Saturday. — Brisk east wind. The only effect seen resulting from this brisk wind was a re-opening of the one hundred and eighty yard lead and some water spaces a mile on the starboard bow and astern.

May 9th, Monday. — A pleasant figure in temperature at all events. Maximum plus 17°. Soundings in thirty-seven fathoms; no drift. Light E. S. E. breeze. And still the days succeed each other, and no signs of a change. Twenty months of this imprisonment is monotonous indeed.

If our poor dogs could talk they would most likely express their astonishment at the small amount and great variety of food offered them for consumption. It is not only a surprising but a wonderful matter that we have kept them alive so long. Fish was very acceptable while it lasted; pressed scraps (horse flesh, etc.) not so good, but yet not to be despised; and seal and walrus meat were excellent substitutes. But it is over a year since we have seen a walrus, and such few seals as we have caught since last summer have been reserved for our own eating. The entrails of our few captured bears were but a hasty lunch, hardly worth mentioning. For a long time, therefore, our dogs have been on short commons. Condemned oatmeal was given them while any was on hand; then condemned corn meal and suet; then spare corn meal from naturalist's stores, with suet added; and we are now about to try desiccated potatoes and suet. No doubt they think, "Well! what next?"

May 11th, Wednesday. — One uncomfortable result of the high temperature is making itself apparent, namely, a thaw within the cabin. The accumulation of frost in the window-pockets, and more particularly

between the ceiling and bulwark, is melting slowly but steadily, and as the ship has a list of 2° to port, several little streams trickle out from the water-ways in my room and from under the chart drawers, and make unpleasant little puddles. If dried up as soon as they are seen no great inconvenience results; but if not earlier attended to they spread and find their way down below through the ventilating holes bored in the deck, or in some cases, as I am sorry to see, through the deck seams. I do not think that such was the case last spring.

I frequently wonder how long a body of men could stand this enforced monotony of existence without giving up altogether. There is no way of solving the problem except by our own experience, for we have had a greater amount of it thus far than any others on record. My own sensations are those of unmitigated disgust, and I suppose the sensations of others are similar to my own. I do not care to commit to paper even my own ideas and feelings. The probabilities are that I shall never forget them, and that hereafter they will be pushing themselves to the front of my mind in spite of my efforts to keep them back.

May 13th, Friday. — To-day I observed Aneguin cutting up a curious looking thing like a block of pasteboard for our dogs, which were standing around expectantly. Upon asking him what it was, he replied, "Pie." "What?" said I, wonderingly. "Pie," said he. Curious to know how pie ever came in that shape, I examined carefully a package, and just managed to decipher the word "pumpkin," and, of course, at once knew it was a condemned package of dried pumpkin. As Aneguin has eaten pumpkin pie on board, he at once gave the name of pie to the vegetable itself, and

as "pie," therefore, it was served out to the dogs, no doubt to their admiration of man's ingenuity in finding food for them.

Alexey's case still hangs on curiously enough. The ulcer in his leg heals very stubbornly, and does not look healthy in healing. Otherwise he is in excellent condition, eats well, sleeps well, looks well, and feels well, and has no more scorbutic symptoms otherwise than I have (who have none at all). Bright and cheerful is he also, and save for this stubborn ulcer would be on duty as before.

May 14th, Saturday. — A flock of eider ducks seen flying west during the forenoon. An almost continuous snow-fall to still further enliven us.

May 15th, Sunday. — At last there seems to be a disposition on the part of the weather to grow warmer, and it is high time. Full moon occurred on the 13th, and we have been accustomed to have our coldest weather at that phase.

Inspection and divine service as usual.

May 16th, Monday. — LAND! There is something then besides ice in this world. About seven o'clock this evening Mr. Dunbar, who usually winds his way aloft several times a day, could hardly believe his eyes when they rested on an island to the westward. He called Chipp to look at it, and Chipp saw it was land sure enough, and sent Ericksen to inform me. I had just finished working out our position when the extraordinary news came, and was writing out the result: Latitude 76° 43′ 20″ N., longitude 161° 53′ 45″ E., a drift since the 14th of five and a half miles to N. 16° E. Of course I dropped my books and ran up to the fore yard, and there, sure enough, I saw a small island one half point forward of our starboard beam,

the first land that has greeted our eyes since March 24, 1880, nearly fourteen months ago. And our voyage, thank God, is not a perfect blank, for here we have discovered something, however small it may be. Some fog is resting over it, and to the right hand or northward of it, and we do not think we see all of our wonderful landfall. Bearings I take at once, and find *our* island bears S. 78° 45′ W. (magnetic), or (the variation being 18° E.) N. 83° 15′ W. (true), but we can do nothing more. Its distance we cannot estimate. If low land comparatively, it may be forty miles distant (see our idea of Herald Island's distance), and if high land seventy to eighty miles. But after a number of days, if we change the bearing of it to some extent, I can compute its distance, and determine if, and in what manner, we can land upon and take possession of and explore our discovery. Cooped up as we have been for over twenty months, we shall enjoy getting our foot on solid earth or stone as much as if it were Central Park, for it will be a change. But whether it will be earth or stone we do not know of course. What this poor desolate island, standing among icy wastes, may have to do in the economy of nature I do not know, or in fact care. It is solid land, whether of volcanic origin or otherwise, and will stand still long enough to let a man realize where he is. Moreover, this must be the spot to which the ducks and geese have been steadily flying, and if we can get some of them for a change to our canned meats, what a treat! And then bears must swarm on *our* island! In fine, this island is to us our all in all. We gaze at it, we criticise it, we guess at its distance, we wish for a favoring gale to drive us towards it, and no doubt we would accept an assertion that it contained a gold mine which

would make us all as rich as the treasury without its debts. I believe most of us look carefully at our island before we go to bed, to make sure it has not melted away. Fourteen months without anything to look at but ice and sky, and twenty months drifting in the pack, will make a little mass of volcanic rock like our island as pleasing to the eye as an oasis in the desert.

Beside this stupendous island, the other events of the day sink into insignificance.

May 17th, Tuesday. — Our island continues to be the cynosure of all eyes, of course, and as the fog which hung over it yesterday has disappeared to-day, we are able to define its appearance better, the white portion which the fog hid yesterday showing as a snowy slope extending back to some distance. The shaded portions seem to be rock, with clefts or gulleys in it, in which snow has lodged. The highest and further corner seems to be a volcano top. We are watching the land anxiously enough, and getting our position by observations daily, but of course in one day we have not altered bearings at all. That may be a question of weeks, unless we have stiff winds. Sights to-day place us in latitude N. 76° 43′ 38″, longitude E. 161° 42′ 30″, — a drift since yesterday of two and one half miles N. 83° W., or exactly towards the island.

Soundings forty-three fathoms (mud and pebbles), a slight drift N. by E. being indicated by the lead line. Temperature, maximum, 11.5°; minimum, minus 5.5°. What lovely weather for the middle of May!

May 18th, Wednesday. — Latitude N. 76° 44′ 50″, longitude E. 161° 30′ 45″. As we draw ahead of our island, we open out quite a face to the northward, and Mr. Dunbar is quite certain that he saw high land above and beyond it to the westward. My repeated visits to

the crow's-nest show me a strong appearance of high land, but I have not yet been able to say positively that it is not cloud. At one time I thought I could see a connecting snow-line, as if the upper part of our island sloped backward and upward to a higher ridge beyond, but I was unable to see a snow-peak that Mr. Dunbar saw just before I could join him in the crow's-nest. Weather generally clear, bright, and pleasant. An E. wind freshening, and promising a stronger blow for to-morrow.

The ice opened in a crack about five hundred yards to the eastward of the ship, and came together toward midnight, the ship receiving several slight shocks when the ice edges met.

We are favored with an occasional dovekie (black guillemot), shot by some of our people, the luckless bird being attracted by the little lanes and cracks in the ice near us instead of making for the island, where it would be safe. Last Saturday we in the cabin had one apiece for dinner, and I am in hopes of seeing enough hanging to the main boom to have them for dinner fore and aft next Saturday.

May 19th, Thursday. — E. S. E. winds make us move along at a brisk rate, evidenced by our opening out our island's north side. Centre of island bears W. (true).

At 9.30 A. M. the ice quietly opened seventy yards from our starboard bow, and a lane of water about twenty feet in width extended north and south for about three miles, and several other cracks and lanes were visible to the northwest. Whether when we get to the westward of our island the ice will spread and open remains to be seen; but this lane is quite close enough, unless we can use it for an advance. We have a crack under our starboard counter that may connect,

and a crack ahead in the line of our keel as a starter, which may at any time leave our whole starboard side bare.

May 20th, Friday. — Latitude 76° 52′ 22″ N., longitude 161° 7′ 45″ E., — a drift since the 18th of nine miles N. 35° W. As the island point observed on the 16th now bears S. 78° 30″ W. (true), I can compute the distance by the change in bearing, and the result is twenty-four and three fifths miles (and thirty-four and seven tenths miles on the 16th). The dimensions of it I cannot accurately measure yet, though with an octant I find it subtends an angle of 2° 10′ on this bearing. But from our point of view the island is foreshortened, for I think its greatest length is in an east and west direction. As we draw to the northward, we open out the western face and shut in the eastern face correspondingly, but I have taken the same point each time for my bearing by the course indicator on the bridge. There now seems to be a curious little island off the western end, which looks like a mound with a beehive on it, but I hope soon to be able to say whether it is a separate island or a continuation of the first one.

Toward midnight a strong appearance of land was seen bearing west by north roughly, like an inclined plane, but clouds rested on so much of it that I cannot speak positively.

Soundings in forty-two fathoms; drift N. W. indicated. At this rate we shall soon get to the shortest distance from our island, which I locate by computation of its distance before mentioned to be in latitude N. 76° 47′ 28″, longitude 159° 20′ 45″ E. E. S. E. gale seventeen to twenty-one miles an hour, and a pleasant temperature plus 16°. At 8.30 A. M. the ship received a blow under water, seemingly near the stern post, and doubtless from some drifting, submerged ice-block.

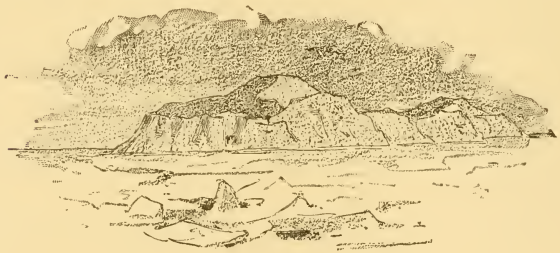
May 21*st*, *Saturday*. — A dull, gloomy day, E. S. E. gale, and I manage to get a meridian altitude, showing that we have made seven miles in latitude at all events. Our island appears only occasionally, but bearing S. 72° W. There seems to be no immediate chance of this blow abating, so it will be a question of waiting to see in what position it leaves us before deciding upon our ability to land upon and take possession of our island.

I am sorry to record the mysterious disappearance of another of our dogs, generally known as Lauterbach, and heretofore recognizable by his having a hairless tail, the result of a scalding accident. He has gone and laid himself away somewhere, for he has been missing several days.

May 22*d*, *Sunday*. — At nine A. M. the ship received another severe shock, probably striking ice under water.

May 23*d*, *Monday*. — I am sorry to be obliged to record the addition of Chipp to our sick-list. For a long time past he has been in poor condition, growing thin and weak, but insisting on going about and attending to his duty. He has strong dislikes to medicines and medical treatment, and would not believe he stood in need of either. Being overruled in that respect by me, he did take a tonic prescribed by the doctor; but of course, as it was taken unwillingly, under protest, no good was experienced from its use, and it was discontinued. Now nature asserts itself, and he is so reduced, by reason of his failure to eat enough, and so nervous and restless, because of continued loss of sleep, that it is simply impossible for him to keep up, and he is forced to his bed. The doctor hopes to have him around in a few days, but I am not satisfied that a few days can repair the damage already done. Considerable fall of soft, large snow-flakes.

May 24th, Tuesday. — The first thing I heard upon arising this morning was that more land was in sight, and the next thing was that the ice was very slack, with many large lanes of water. The strong appearance of land on the 20th, towards midnight, proves to have been land in reality, — another island being added to our discoveries, somewhat longer (if not less distant) than our first named. Upon going up to the crow's-nest I had a good view of both islands and of more water than we have seen since September, 1879. In consequence of the subsidence of the wind, the ice has



Jeannette Island. From a Sketch by Mr. Melville.

become very slack, and numerous long openings or lanes have occurred, varying in width from twenty to one hundred feet, and in length from one eighth mile to three miles. Unfortunately for purposes of navigation they are not connected, and though having a general northwest and southeast direction, do not lead to anything. Just at this moment I would be contented if by any means I could get the ship into one of these islands for a temporary breathing spell, and a chance to get some game for our supplies; but, unfortunately, I cannot saw through thirty miles of ice or blast that amount out of my way. The lanes of water are very tantalizing, for they indicate what might be done if

there were more of them. They seem to be in our neighborhood only, or within a radius of five miles, while the islands are thirty, and say forty miles off, — and from that five miles radius to the islands the ice is as close and compact as ever.

However, we made all the use we could of the openings. The iron dingy, the two kyacks, and the oumiack were put into requisition, and away went parties to hunt for birds and seals, dragging the boats from one lead to another, as occasion required. And while a party of men were thus employed in transporting the oumiack on their shoulders she slipped, and brought so much weight on John Lauterbach (a coal heaver) as to double him up and severely strain his back.

"It never rains but it pours," is an old saying, and it seems to be proven in our case, for hardly had we prepared ourselves to take care of Chipp when we have another case, Lauterbach. When I saw him being supported back to the ship by a shipmate, I was afraid he had shot himself, or had been shot by a companion, — accidentally, of course, in both cases, — and I ran out to meet him with considerable alarm. For some time it was impossible to find out what was the matter, for the man

Henrietta Island. From a Sketch by Captain De Long.

was in great pain and unable to talk. However, beyond a severe wrench to the small of his back, there was no injury inflicted, and except for his being laid up for some days no serious consequences are to be anticipated.

Now for the land. It is an island beyond doubt; and its nearest point, which I take to be its southern extremity, bears S. 69° 30′ W., and it subtends an angle of 3° 35′, while our first discovery's eastern end bears S. 17° W., and subtends an angle of 2° 42′. I think both islands extend in a west by north and east by south direction. Computation of the position of our first island, from our change of its bearing of the 20th and 24th, would put it more accurately in latitude N. 76° 48′, longitude E. 159°; and until I can get its bearing due south (true), this bearing of to-day and the 20th are more nearly accurate as to longitude than those of the 16th and 20th.

Latitude N. 77° 16′, longitude E. 159° 33′ 30″. A drift since the 20th of thirty-two and one half miles N. 41° W. This is progress indeed, — eight miles a day. Considering that we commenced the year in latitude 73° 48′, longitude E. 177° 32′, we have no reason to complain at the long step we have made, — 310 miles N. 47° W.

Soundings in forty and one half fathoms, and temperature comparatively cheerful, plus 27°.

Our engineer's force are occupied in putting together the windmill pump and getting it ready for the summer's work. Chipp is still quite weak, and in consequence obliged to keep his bed. I have taken every precaution to keep his surroundings as quiet as possible, muffling chair legs, not striking the ship's bell, etc., and he has had a peaceful day in consequence.

May 25th, Wednesday. — Our invalids are progress-

ing slowly. Chipp is still very weak, and obliged to keep his bed altogether by the surgeon's orders, as a surety for rest and quiet. Danenhower is just the same, but as he caught a cold some days ago, he is forced to stay below at all times, except at meal hours. Lauterbach is better, though his back will feel the wrench it received for some days. Alexey is slowly getting his leg to heal, there being now but a very small hole open. Otherwise, we are all as well as usual, and all hands are certainly free from scorbutic taint.

Many of our lanes are found closed to-day, the ice having come together during the night. A light film, say one eighth of an inch of ice, formed over the lanes not disturbed. Our islands were in plain sight all day, giving me a chance to get good bearings and angles, which are sufficiently indicated by the sketches on the preceding pages.

May 26th, Thursday. — A dull, gloomy day, with overcast sky, and N. N. W. breezes puffing fitfully. The islands were invisible until six P. M., when they came out from the dull, thick haze. The ice seemed to slack up again to-day, numerous unconnected lanes and ponds showing themselves, but of no use to us yet. Took advantage of the breeze to make the windmill do all the pumping after noon, to the relief of the men on watch, who must have learned to hate the hand-pumps many months since.

May 27th, Friday. — Latitude 77° 14′ 45″ N., longitude 159° 16′ E. A drift since the 25th of five miles S. W. This brings us much nearer our second island, and it is very tantalizing to be gazing at what seems a fine bay and not be able to sail into it. Soundings in thirty-nine fathoms, slight drift S. W. On account of light winds had to close the water gates again and fall back upon hand pumping.

May 28th, Saturday. — Soundings forty fathoms, and the state of the temperature is by no means pleasant, maximum 19°, minimum 15°. Our invalids give me the usual anxiety. Chipp is very weak, and I fear it will take a long time to build him up. Danenhower, of course, will be of no use so long as he is in the ship. Alexey slowly recovers. Lauterbach is improving, his back slowly recovering from the strain. But with many things crowding in on me I almost feel that the crucial moment in our voyage is at hand.

May 29th, Sunday. — We get considerable work out of the windmill to-day, and our men are consequently relieved from the endless clang-clang of the hand-pump. Our dull and gloomy weather continues, to my disappointment, for I can get no observations for position. These are particularly desirable now, because I want to fix the position of Henrietta Island. It is very difficult to get good bearings from deck of anything, because the ice-hummocks and ridges are so high and so continuous that it is only here and there that we can see even the plainest land; and then it looks so much like the black spots in the ice, that when one puts his eye down to the sight-vane of the compass, he is as apt to take the bearing of a black spot as of the land. Besides, we cannot see extreme points from the land. Angling with a sextant from aloft is cold work, and some points show too faintly to get a reflection, so that though I have measured angles several times, I have only recorded them when I have been sure of them.

We were startled this afternoon by an enormous flock of ducks, estimated to be five hundred in number — more than any one had ever seen before — flying quite low, and heading to the northward, where I suppose there must be more land. Our dogs took after them in a body, until stopped by water, and turned back.

The ice seems to be very close again, an easterly breeze setting it in motion enough to press against the islands and close all lanes.

Inspection and divine service as usual on Sundays.

May 30th, Monday. — I have decided to send a party to try to make a landing on Henrietta Island. Tired of waiting for a chance to get observations to determine its position, I accept twelve miles as its probable distance southwest and a half west, true. Though I know the traveling will be heavy, I hope that by sending two officers, four men, fifteen dogs, with a sled and light dingy (for ferriage), and seven days' provisions, as the only heavy weights, they will be able to accomplish my object, — landing, leaving a record of our condition, and perhaps bringing back a good supply of birds. Having but one commissioned officer available, Melville, he must take charge of the party. With Chipp and Danenhower both on the sick-list, they can neither be sent, nor left in charge of the ship if I go myself, as is my strong desire. The doctor cannot go, for his steady sick-list puts him *hors concours*, and my responsibility for the ship and the safety of all hands will not permit me to leave her in charge of Mr. Dunbar, the only sailor man in the cabin besides myself fit for duty. Consequently I make out orders for Mr. Melville to go in command, and to take Mr. Dunbar, Nindemann, Ericksen, Bartlett, and Sharvell with him, and to start to-morrow morning. The weather continues good, with light winds, and barometer rising to 30, and I think we are drawing in toward the island all the time with the ship. Such arrangements as I have made for them and their return I will write out in full to-morrow. To-day I had Sweetman remove the porch from the starboard side of the galley, and I

set the men to work digging a trench around the ship. We are now beginning to be straitened for dog food; all our condemned meats, fish, and other suitable articles are ended. Having tried the dogs upon everything to their seeming satisfaction, we at last tried them with potatoes (desiccated). But here was the dividing line. They turned up their noses and walked away in disgust, and no matter how great their hunger, they cannot be induced to astonish their stomachs with such an excellent (?) anti-scorbutic. In fine, something else had to be done, and so I ordered one half pound English pemmican, and one half pound corn meal to be served out to every dog every second day from the ship's stores; and in order that no more of such precious food than was absolutely necessary should be expended for dogs, I gave orders that three old and worn-out dogs should be quietly removed from the ship and shot. Of course I regret taking even a dog's life, but where it is a question of sentiment only in putting priceless food into a dog, from which no work can ever be obtained, the sentiment cannot be tolerated.

May 31st, Tuesday. — At nine A. M., everything being ready, the sledge party, in charge of Melville, started. Mr. Dunbar, Nindemann, Ericksen, Bartlett, and Sharvell composed the *personnel*, and the following the material: —

15 dogs,
42 lbs. American pemmican,
21 lbs. pigs' feet,
42 oz. lime juice,
1 McClintock sled,
1 McClintock dingy,
1 tent,
5 tent-poles,
210 lbs. English pemmican,
6 sleeping-bags,
10½ lbs. sardines,
42 lbs. mutton-broth,
5¼ lbs. coffee,
2⅜ lbs. tea,
5¼ lbs. chocolate,
10½ lbs. sugar,
2 rubber blankets,
6 packed knapsacks,

42 lbs. bread, 2 rifles,
1 cooking-stove and mess gear, 2 shot-guns,
sextant, artificial horizon, prismatic compass, opera-glass, ensign, medicine, etc.

We all assembled on the ice, and of course cheers were exchanged. Away they went merrily enough until they came to an ice opening, where they were obliged to make a ferriage. Here some of their dogs ran away and returned to the ship, but I sent them back at once, and followed up the sled until they made a new departure. I watched them frequently from the crow's-nest, and at six P. M. I saw them about five miles from the ship, evidently halting for a rest. Of course I sent lime juice, and moreover I started them with eleven gallons fresh water; and besides having Dr. Ambler prepare medical advice and suggestions, I directed Melville frequently to rest his party, to look out for snow-blindness, and to avoid using surface snow and floe ice. Should the distilled water give out during the trip to the island, he was directed to scrape the broken-down crystals from the tops of old hummocks. From the moment of his departure, a large black flag eleven feet six inches square was to be kept flying at the main, and he was frequently to take bearings of it. Should it shut in thick after he had been away forty-eight hours, one of the whale guns or the brass piece will be fired every four hours; and in clear, bright weather, from and after the third noon from his departure, a fire of some material, giving plenty of smoke, will be made at meridian. He is not to remain at the island more than twenty-four hours, and is to do as much as he can in carrying out my written orders.

Of course there is some risk in this trip. But the weather remains good, light northerly winds prevail,

and our drift seems to be directly towards the island. I want to know whether there is any bay in which I can place the ship, and perhaps remedy her leak; whether there is any animal or bird life with which I can replenish our waning stock of provisions; and whether, in the event of disaster, we can fall back upon this island as a place to live, and make a fresh departure for the Siberian coast; whether there is any more land in sight from its summit; and very particularly what is the appearance of the world beyond, whether interminable ice or a chance of water. Should the ice break up around us, I want to know what are the prospects; and so much knowledge can be gained by this visit, as well as the satisfaction of planting our flag upon a newly discovered piece of the earth, that I think the risk of undertaking the journey is justified. During the afternoon, when the weather cleared up, I got good bearings, and I find Jeannette Island on our port bow (S. 11° E. true) and Henrietta Island on our starboard bow (S. 51° W. true), verifying my belief that we are drifting toward the latter island, and heading between the two. My anxiety will be endless and unremitting until I get all hands under my wing again; and I pray God so to aid them and guide us that no mishap may occur.

Soundings in thirty-nine fathoms; slight drift S. S. W., and a low temperature to close our month — 9°. Lauterbach restored to duty from sickness.

June 1st, Wednesday. — What next? The doctor informs me this morning that he is of opinion that several of our party under his treatment are suffering from lead poisoning. Newcomb is quite under the weather with severe colic, and Kuehne is about the same. Alexey is complaining in a similar manner, and

our steward is very ill indeed. The doctor says he is a little disturbed also, and Chipp has had a sharp touch of it. No less than six people, and the sledge party yet to hear from. Suspicion was first directed to the water, for as all joints about the distiller are red leaded to make them tight, we fear that some of the lead was carried over with the steam and deposited in the receiver. This, unfortunately, cannot be entirely avoided, though it may be reduced. Then I examined all vessels in which drinking water is carried or tea and coffee made, and I put out of commission all having any solder patches, substituting iron vessels lined with porcelain. But upon examining our tomatoes, they were found to show traces of lead in larger amounts than the water, and the doctor thinks that the distemper, if I may so call it, is due to our large consumption of that vegetable. The acid of the tomato acts chemically upon the solder used in the tins, and the dangerous mixture is formed; and since we have had tomatoes every day for dinner subsequent to May 4th, it is assumed that we have become largely dosed with lead, and some of us have had to succumb. Inasmuch as we all eat tomatoes, the exemption of the majority is due to their greater capacity for lead, I suppose, for no good reason presents itself to my mind. It has transpired that the steward, who is the worst case, is remarkably fond of this vegetable, and eats of it unsparingly. Of course we have eaten tomatoes four times a week ever since our commissioning, and until May 4th, without any bad result, but that does not prove anything. A very interesting question here comes in. Our canned fruits have, I believe, similar chemical action upon the lead soldering, and no doubt we are absorbing more or less lead all the time. Now does this chemical action

begin at once or at the end of two years? A very important question to an Arctic expedition, for of what use is it to secure exemption from scurvy for two years if disabling lead poison finishes you in the third year? The doctor says each severe attack may be mitigated by medicine, but a continued absorption of the lead will produce palsy, and that would certainly be a perplexing disease to deal with in an Arctic ship. If the chemical action begins as soon as the tomato is canned one is in danger at all times. However, as we stood the vegetable four times a week, I order a return to that issue to see what effect will be produced.

We are certainly drawing in upon Henrietta Island, and getting Jeannette Island well opened on the port bow. Bearings to-day: ship's head S. 10° W. (true); east end Jeannette Island, S. 10° 30′ E.; south end Henrietta Island, S. 51° W.; north end, S. 57° W.; latitude 77° 16′ 14″; but I could get no time sight.

During the forenoon our traveling party were sighted from aloft, apparently more than half way to the island.

Dull and gloomy weather; temperature, maximum 15°, minimum 8°, — lovely for a June day. (Strawberries will be late this year in these latitudes.) The ice seems to have slacked up again, a wide opening occurring about twenty yards west of the ship, and extending for a mile north northwest and south southeast.

June 2d, Thursday. — Henrietta Island has been in sight all day and very plainly too, and I am very much deceived if it is more than eight miles distant.

Our lead invalids are responding to treatment, the steward more slowly than the rest, as his attack was the most severe. I have had occasion heretofore to note how naturally one of our two Chinese does the

work of both whenever one is sick, and I am not surprised, therefore, to see the cook calmly cook for all hands and look out for the cabin and ward-room, and wait upon the table; and just now, with extra things like arrow-root, beef-tea, etc., for the sick, and the serving of one sick officer's meals in his room, he has no easy time of it. But it is all done, and Ah Sam nurses Charles Tong Sing meanwhile. My respect and admiration for these two men are boundless. Everything about the ice seems to have come to a stand again. Ice has formed over all openings.

June 3d, Friday. — Nothing yet to be seen of Melville and his party. Taking all things into consideration, I do not expect him before to-morrow night or Sunday morning; but though neither of these times are here yet, I cannot help the constant uneasiness which I experience. Henrietta Island was in plain sight all day, and we are assuredly closing in on it. Bearings of the south end, S. 52° W. (true), and of the north end S. 61° W. (true). I fix our position to-day in latitude 77° 13′ N., longitude 158° 12′ E.; and by the change of bearing since May 24th I fix the south end of the island in latitude 77.8° N., longitude 157° 43′ E., and that makes it eight miles distant. Our drift since May 25th has been S. 74° W. nineteen miles.

We discovered this morning that the ice under the stern was domed up and cracked, and we came to the conclusion that the ship was trying to rise in her bed. To facilitate this operation, and to prevent too much strain being brought on her keel which prolongs under the rudder, the men were set to work digging away the ice. It was a tough job, for it is as hard as flint, and clings like an old and tried friend. Here and there the mark of the fibre of the wood shows in the attached

ice, and in several places the oakum has been torn out of the seams when the ship has been raised a little.

We rig our quarter deck pumps for an hour to-day, and pump the ship out dry, getting up much of the dirty water which has been stagnant all winter, and of late has occasionally greeted our noses. By counting the number of strokes of our pumps and computing the work done, I find that our leak now amounts to 4,874 gallons a day, or about 203 gallons an hour.

The steward has gone back to duty to-day, to our great comfort. He seems quite recovered from his share of lead. Chipp is, however, set back again by an imprudent eating of raisins yesterday. Newcomb is terribly down in the mouth, and looks as woe-begone as possible. He has suffered considerably. Curious that so many of us feel no effects of "Lead in ours" as yet! And we are all on the same diet. I hope none of the traveling party have been afflicted, for assuredly they have enough to do for well men.

June 4th, Saturday. — With one thing and another a lively day. As a fog shut everything in after three P. M., I got our brass gun out and loaded it for a signal to our traveling party should they be within range. Before noon it was fairly clear and pleasant weather, and at eleven A. M. I had a fire made on the ice ahead of the ship, and with tar and oakum we made a good black smoke for an hour. About two P. M. I heard a shot, and going out to see about it I learned that a bear had come up near the ship without being seen by the man on watch (a bright lookout on Dressler's part), and when Starr, who was astern, ran out to get a shot, his aim was so disturbed by his breathlessness that he missed, and away ran Bruin. Chase was given him, of course, and he was fired at; but alas! our 600 pounds of fresh meat escaped.

From Starr's account, he came up and looked at our few remaining dogs, and they looked at him without making a sign. Then Bruin walked to the nearest clothes-pole, deliberately used it to scratch his back and sides against, and then, seeing Starr, commenced to walk away. As he heard the bullet sing he quickened his pace to a run and (why prolong it) escaped. Our tar smoke, no doubt, attracted him. Fired the guns at four P. M. At eight P. M., with a good clearing, we could see nothing of the sledge party.

June 5th, Sunday. — At six A. M., Manson, the man on watch, informed me that the traveling party was in sight. Going out on deck, I could see the silk flag here and there appearing among the hummocks as the sled advanced through the ice. I ordered our colors to be shown, and the men to be turned out to receive the travelers, and then hastening out on the ice tried to fire the whale-gun as a signal to our people that they were seen. After failing once or twice, I left the gun in charge of the men who had come on deck, and came on board. As I reached the mainmast I heard a slight explosion, and, anxious to know whether it was our gun or a shot from the returning party, I was rushing up on the bridge, when crash! I got a terrible blow on the head. Forgetful of the windmill, in my anxiety for the travelers, I had rushed up in time to get a blow from one of its wings flying before a ten-mile wind. Stunned and confused I crawled back, while the blood sprinkled on the ladder and quarter deck, and the quartermaster ran toward me in alarm. Feeling that my head must be cut, I called the steward to get me some water in a basin, and when he came I told him to see what was wrong. He looked at my head, and exclaimed, "Oh my! great big hole!" upon which I con-

cluded I wanted the doctor's opinion, loath as I was to disturb him and add to his already great care and anxiety. When Dr. Ambler came up in the cabin, I learned that I had my head cut open in a four-inch gash, etc. Stitching and plastering followed, and then I resumed my scrutiny of the returning party.

To my relief I could count six people, and all hands seemingly had come to a halt. As soon as possible, I sent out Mr. Cole and the starboard watch to meet them and help them in. At 8.50 A. M. along came the sled, drawn by the dogs and three of the six travelers. Melville and Sharvell had remained with the boat, and Mr. Dunbar was carried part way and walked part way, and reached the ship snow-blind. He was disabled at noon on the third day out, and led or carried thenceforth. Melville sent me the following message, on receipt of which I sent the port watch in Sweetman's charge with a spare sled, and, accompanied by the doctor, I went forward shortly after. By 9.40 A. M. I had them all on board, worn and tired, it is true, but no one disabled but Mr. Dunbar.

Melville's message: —

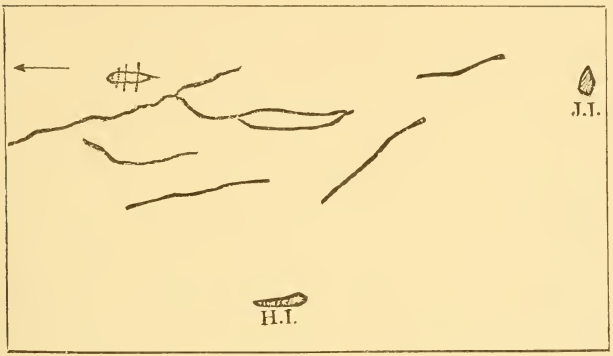
10.30 A. M. I have just broken the sleigh runner, dismounted my boat, and am in the midst of a heavy jam of ice. Please send another sled at once. Landed on the island 5.10 P. M., third day out.

Respectfully, MELVILLE.

To Lieutenant De Long, Commanding Jeannette.

The party landed on the island on Thursday, June 2d (Friday, June 3d), hoisted our silk flag, took possession of the island in the name of the Great Jehovah and the United States of America, and, agreeably to my orders, named it Henrietta Island. They built a cairn and placed within it the record which I sent with them,

and made as much examination of the island and search for vegetation as their limited stay would permit. The island is a desolate rock, surmounted by a snow-cap, which feeds several discharging glaciers on its east face. Dovekies nesting in the face of the rock are the only signs of game. A little moss, some grass, and a handful of rock were brought back as trophies. The cliffs are inaccessible, because of their steepness. The ice between the ship and the island is something frightful.



Drifting by Jeannette and Henrietta Islands.

Road-digging, ferrying, and its attendant loading and unloading, arm-breaking hauls, and panic-stricken dogs made their journey a terribly severe one. Near the island the ice was all alive, and Melville left his boat and supplies, and carrying only a day's provisions and his instruments, at the risk of his life went through the terrible mass, actually dragging the dogs, which from fear refused to follow their human leaders. If this persistence in landing upon this island, in spite of the superhuman difficulties he encountered, is not reckoned a brave and meritorious action, it will not be from any

failure on my part to make it known. I issued a general order communicating the names and positions of the two islands: Jeannette Island (our discovery of May 16th), in latitude N. 76° 47′, longitude E. 158° 56′; and Henrietta Island (our discovery of May 24th), in latitude N. 77° 8′, longitude E. 157° 43′; and in the evening I ordered a double ration of whiskey served out forward. At ten A. M. I read the Articles of War and inspected the ship, and at 1.30 P. M. I read divine service.

Thank God, we have at least landed upon a newly discovered part of this earth, and a perilous journey has been accomplished without disaster. It was a great risk, but it has resulted in some advantage.

Our sick-list now assumes quite a proportion. Chipp, Danenhower, Newcomb, Dunbar, Alexey, and, in addition, my head for a day or two. For one night, at all events, the doctor insists I shall not go out to the observatory, lest I take cold in the cut and erysipelas ensue; but as soon as I get over the stunned and dazed sensations I have now I think I shall be as fit for work as before.

June 6th, Monday. — While the ocean around us has been alive all day we have remained perfectly calm and undisturbed. This morning we found that such a disruption of the ice-fields had occurred as to leave us on the western side of a floe island, about one hundred yards from its edge, and that the whole of the outside ice was broken up into a terribly confused heap of rolling, tumbling, and grinding floebergs, forcibly reminding us of our experiences of November, 1879. We were evidently in transit across the north face of Henrietta Island, and bound westward ho!

Our ice-island was irregular in shape, with its longer

diameter about a mile in extent, and its shorter diameter about half that amount. Close to us we had plenty of water, but it was in disconnected spots, and we should have been infinitely worse off had we been in one of them. No lead making toward Henrietta Island was to be seen, and in fact the changes going on all over, except in our isolated spot, were so kaleidoscopic that it would have been impossible to detect such a lead if it had existed. Lanes and openings were forming and closing during all the forenoon, and every once in a while the sudden rearing up of some ridge of broken floe pieces, twenty and thirty feet high, showed where a lane had closed, or the sudden tumbling of a mound showed where a lane was opening. In all this confusion worse confounded we remained as quiet as ever. We were moving along slowly and grandly, a dignified figure in the midst of a howling wilderness. Had our floe broken up and hurled us adrift we should have had the liveliest time in our cruise, for to have escaped destruction would have been a miracle, and to have got anything or any person out of the ship in case of accident an impossibility. One can hardly fall back upon yawning chasms for launching boats or depositing provisions.

Over such ice as this Melville charged in for the land on his late journey, and he tells me on one occasion, while aiding Dunbar across a large hummock up-ended, the ice opened beneath them, and the hummock sank until they just escaped touching the water as they sprawled out on the ice.

In anticipation of any accident or mishap I had the steam-cutter hoisted, the kayak and the oumiak brought aboard, and all other things which could not be grasped at a moment's notice.

Soundings in thirty-eight fathoms, muddy bottom. Drift moderate to S. W.; N. E. to E. winds, nine to twelve miles an hour. Barometer 30.16 to 30.20. Our observation of the rate at which we were drifting was prevented by a dense fog, which hid the island completely after three P. M. Of course I was more or less anxious, not being sure that we were not sweeping down on the island instead of going by it; but as nothing could be done, we were forced to fall back upon our long and too uncomfortably familiar resort, waiting in blindness until we could see.

June 7th, Tuesday. — At ten A. M. the fog cleared away for the first time since five P. M. yesterday, and we saw the island right ahead (S. 80° W. true), and about four miles distant. We were clearly in transit across the north face of the island, and so steadily did we move that it was easy to check our flying-jib stay as it passed slowly from point to point. The confusion worse confounded of yesterday was tranquillized, though many ridges of piled up floe pieces between us and Henrietta Island showed that the fight must have gone on all night, as our fields ground and ploughed their way along. Many of the large water spaces had closed tightly, and the very large one which was on the west side of our ice-island had disappeared. A long ridge of ice-slabs and blocks six and seven feet thick had fenced us in on that side, showing where a meeting had taken place and a crush had occurred, of which we had been quite unconscious, though it was only one hundred and fifty yards distant. Considerable water-sky was visible to the southward and southwest, and several unconnected lanes were to be seen in those directions. The ice having passed the obstruction caused by Henrietta Island had seemingly closed up

again and resumed its accustomed drift N. W. In that direction the ice extended in a limitless field. Soundings in thirty-seven fathoms; moderate drift W.; E. N. E. and E. winds prevailed all day from ten to fourteen miles velocity, and from the general appearance of things I am inclined to think we are going to have a little blow.

I am intensely relieved that our traveling party had no mishap. They started in just the best time and got back none too soon. Sunday morning they were all on board, and Monday we commenced our drift again. Of course, with the fogs and our drifting, had they been absent yesterday the chances of their safety would have been seriously jeopardized. And now where next?

June 8th, Wednesday. — By great good luck got sights for position and determined it to be latitude N. 77° 14′ 45″, longitude E. 156° 41′ 30″, a drift since the 3d of twenty and a half miles N. 85° W. As we moved so little while the sledge party was away, we have probably made the most of this distance in the past three days. Soundings in thirty-four and a half fathoms, a rapid drift W. S. W. being indicated by the lead line; lowered and hauled the dredge.

A little lane of water remains on what were the north and east sides of our island, but otherwise the ice-field seems as boundless as ever. We are leaving Henrietta Island rapidly to the eastward of us, and before many days it may be lost to view. Inasmuch as we have passed it already, one might call it a thing of the past. (I am afraid that is a poor joke, but since the windmill struck me I can do no better.)

Fresh E. N. E. breezes fifteen to seventeen miles an hour. Barometer 30.11 to 30.14.

I am glad to say that Alexey was this day discharged

from the sick-list, though still kept under slight medical attention.

June 9th, Thursday. — Latitude N. 77° 14′ 20″, longitude E. 156° 7′ 30″, a drift since yesterday of seven and three quarters miles S. 87° W. Soundings in thirty-eight and a half fathoms. No perceptible drift. Clear, bright, and pleasant weather, E. N. E. breezes fifteen to eleven miles an hour, and barometer 30.13 to 30.25. At eleven P. M. the ship received several severe jars. At 11.30 the old eighty-yard lead, or what was left of it, opened to a width of ten feet, and at midnight such a snapping and cracking took place around us that I concluded we were in for a time, and hastily bundling on my clothes I rushed out.

CHAPTER XII.

LEAVING THE SHIP BEHIND.

11 — 25 *June*, 1881.

The Attack of the Ice on the Ship. — The Break across the Ship. — Orders given to remove Provisions. — The Ship begins to fill. — The Unloading. — The Ship sinks. — The Camp on the Ice. — Preparations for Journey. — Loading of the Sleds. — Arrangement of Camp. — The Sick-List. — Orders for the March. — Deposit of Records. — The Start. — The Difficulties at the Outset. — Terrible Roads. — The Heavy Loads. — Snow and Rain. — The Cracks in the Ice. — Ice Bridges and Ferries. — Fog. — The First Good Day's Work. — The Daily Routine. — Papers brought to Light. — Doubts as to Locality. — Reconnaisance.

[Up to this time Captain De Long had kept his private journal, in addition to the ship's log, and from that journal the narrative has been taken. After abandoning the ship he kept but one journal, and the pages which follow are from that, with the exception of the first entry, which is from the ship's log.]

June 10*th*, *Friday*, ship's date (*June* 11*th*, *Saturday*, correct date). — At 12.10 A. M. the ice suddenly opened alongside, and the ship righted to an even keel. Called all hands at once, and brought in the few remaining things on the ice. The ship settled down to her proper bearings nearly, the draft being eight feet eleven inches forward, and twelve feet five inches aft. A large block of ice could be seen remaining under her keel. At the first alarm the gate in the water-tight bulkhead forward was closed, but the amount of water coming into

the ship was found to decrease, a small stream trickling aft being all that could be seen.

There being many large spaces of water near us, and the ice having a generally broken up appearance, it was concluded to ship the rudder, to be ready for an emergency awaiting the moving of the ship. After some trouble in removing accumulations of ice around the gudgeons the rudder was shipped, and everything cleared away in the wake of the booms and yards for making sail.

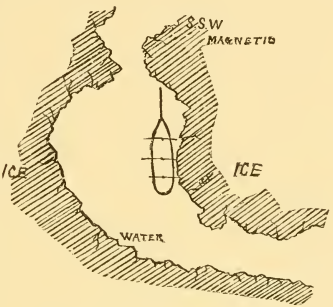
As well as could be judged by looking down through the water under the counters, there was no injury whatever to the after body of the ship. As soon as possible a bow line and quarter line had been got out, and the ship secured temporarily to the ice which remained on her starboard side as nearly in the same berth as she could be placed. By looking down through the water alongside the stem on the port side, one of the bow straps near her forefoot was seen to be sprung off, but otherwise no damage could be detected. It was assumed by me that the heavy ice which all along bore heavily against the stem had held the plank ends open at the garboards, and that as soon as the ship was able to move from the heavy ice the wood ends came together again, closing much of the opening and reducing the leak; the water-line, or rather water-level, being below the berth deck. No difficulty was anticipated in keeping the ship afloat and navigating her to some port, should she ever be liberated from the pack ice of the Arctic Ocean.

Sounded in thirty-three fathoms, bottom mud. Rapid drift W. S. W.

June 11*th*, *Saturday*, ship's date (*June* 12*th*, *Sunday*, correct date). — At 7.30 A. M. the ice commenced to

move toward the port side, but after advancing a foot or two came to rest. Employed one watch in hauling heavy floe into a small canal on the port bow, to close it up, and receive the greater part of the thrust.

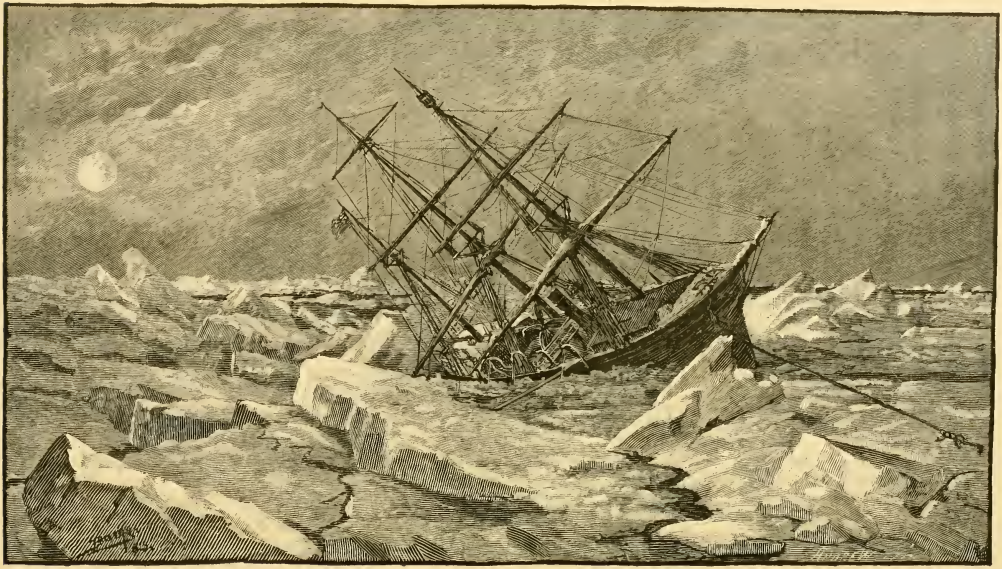
The ice at ten A. M. had advanced toward the port side until these floe pieces had received the thrust, and everything quieted down again. The situation of the ship and her surroundings may be seen below.



Position of the Ship before the final Crush.

At four P. M. the ice came down in great force all along the port side, jamming the ship hard against the ice on the starboard side of her, and causing her to heel 16° to starboard. From the snapping and cracking of the bunker sides and starting in of the starboard ceiling, as well as the opening of the seams in the ceiling to the width of one and one fourth inches, it was feared that the ship was about to be seriously endangered, and orders were accordingly given to lower the starboard boats, and haul them away from the ship to a safe position on the icefloe. This was done quietly and without confusion. The ice, in coming in on the port side, also had a movement toward the stern, and this last movement not only raised her port bow, but buried the starboard quarter, and jamming it and the stern against the heavy ice, effectually prevented the ship rising to pressure. Mr. Melville, while below in the engine-room, saw a break across the ship in the wake of the boilers and engines, showing that so solidly were the

stern and starboard quarters held by the ice that the ship was breaking in two from the pressure upward exerted on the port bow of the ship. The starboard side of the ship was also evidently broken in, because water was rising rapidly in the starboard coal bunkers. Orders were now given to land one half of the pemmican in the deck-house, and all the bread which was on deck, and the sleds and dogs were likewise carried to a position of safety. At 4.30 there was a lull in the pressure, and it was assumed for the moment that the ice had united under the ship, and being as close together as it could come would occasion us no further injury, and that we might be able to take care of the ship yet. The ship was heeled 22° to starboard, and was raised forward 4′ 6″, the entire port bow being visible also to a height of 4′ 6″ from the forefoot. (In the early morning we had been able to see through the water down alongside the stem on the starboard side, and we could see that the forefoot was bent to starboard about a foot. This would indicate that the pressure received on the 19th January, 1880, was from port to starboard, instead of the other way, as we then supposed.) But at five P. M. the pressure was renewed and continued with tremendous force, the ship cracking in every part. The spar deck commenced to buckle up, and the starboard side seemed again on the point of coming in. Orders were now given to get out provisions, clothing, bedding, ship's books, and papers, and to remove all sick to a place of safety. While engaged in this work another tremendous pressure was received, and at six P. M. it was found that the ship was beginning to fill. From that time forward every effort was devoted to getting provisions, etc., on the ice, and it was not desisted from until the water



THE SINKING OF THE JEANNETTE.

had risen to the spar deck, the ship being heeled to starboard about 30°. The entire starboard side of the spar deck was submerged, the rail being under water, and the water-line reaching to the hatch-coamings. The starboard side was evidently broken in abreast of the mainmast, and the ship was settling fast. Our ensign had been hoisted at the mizzen, and every preparation made for abandoning, and at eight P. M. everybody was ordered to leave the ship. Assembling on the floe, we dragged all our boats and provisions clear of bad cracks, and prepared to camp down for the night. Took an account of stock and found the following: —

4,950 lbs. pemmican, American,
1,120 lbs. hard bread,
260 gals. alcohol,
100 lbs. cut loaf sugar,
400 lbs. extra crew sugar,
100 lbs. tea,
94¼ lbs. mutton soup,
176 lbs. mutton broth,
150 lbs. Liebig's ext. beef,
252 lbs. canned chicken,
144 lbs. canned turkey,
36 lbs. green corn,
12½ lbs. pigs' feet,
32 lbs. tongue,
42 lbs. onions,
18 lbs. pickles,
120 lbs. chocolate,
36 lbs. cocoa,
205 lbs. tobacco,
48 lbs. veal,
44 lbs. ham,
150 lbs. cheese,
210 lbs. ground coffee,
60 lbs. whole coffee,
75 bottles malt extract,
½ barrel lime juice,
2,000 rounds Remington ammunition,
1 gal. whiskey,
1 gal. brandy,
2 gals. whiskey,
2 gals. whiskey in lime juice,
7 bottles brandy,
First cutter,
Second cutter,
First whaleboat,
Iron dingy,
McClintock dingy,
6 tents,
Sleeping-bags,
33 knapsacks packed,
5 cooking-stoves,
3 boat sleds,
4 McClintock sleds,
2 St. Michael's sleds,
2 medicine chests and medicine.

At midnight piped down.

June 12th, Sunday (or *Monday, June 13th*). — At one A. M. were turned out by the ice opening in the midst of our camp. Transported all our gear and belongings to a place of safety, and again piped down at two A. M., leaving a man on watch. At one A. M. the mizzen mast went by the board, and the ship was so far heeled over that the lower yard-arms were resting on the ice.

At three A. M. the ship had sunk until her smoke-pipe top was nearly awash.

At four A. M. the Jeannette went down. First righting to an even keel, she slowly sunk.

The maintop-mast fell by the board to starboard, then the foretop-mast — and finally the mainmast, near the main truss — when she finally sank; the foremast was all that was standing.

At nine called all hands and breakfasted, after which collected all the clothing, arranging it for distribution. Beside the contents of the packed knapsacks, and the clothing in wear, we find we have the following: —

28 over-shirts (woolen),	20 trousers (cloth),
24 drawers,	8 fur blankets,
27 under-shirts (woolen),	18 woolen blankets,
24 sack-coats,	13 skin parkies, —
8 overcoats,	

and they were divided among all hands as required, much of it being in excess.

Latitude 77° 14′ 57″ N., longitude 154° 58′ 45″ E. Crew engaged in various occupations: getting sleds all ready for boats, changing sleeping-bags. Everybody seems bright and cheerful, with plenty to eat and plenty of clothes. Even music is not forgotten. Lauterbach serenaded us to-night with a mouth harmonica. Set up

a work-tent for my use. Kept silk flag flying. Wind N. E.; force, from two to three miles. Temperature about 23° all day. All visit wreck. Find one chair on the ice, and some oars and spare planks. Set watch at ten P. M. Chipp better. Danenhower lively. Alexey "plenty good." At 9.45 P. M. read divine service.

June 13th, Monday. — Called all hands at seven A. M. Breakfast at eight. Turned to at nine and set to work mounting first and second cutter and whaleboat on their traveling sleds, and at the same time fitting pads and bumpers for stretching under the bilges of the boats, to prevent injury in case of heavy riding or tumbling off hummocks.

Such of the men as were not thus employed were set to work making bags to hold bread, tea, coffee, and sugar for our traveling rations. I have concluded to remain where we are until all our preparations are well made, and then to start properly.

We have provisions enough to live upon for some time without impairing our sixty days' allowance for going south. Our sick are progressing favorably, and this delay will also tend to their advantage.

Sweetman visited the place where the ship sank, but nothing could be seen but a signal-chest floating bottom up. N. E. wind. Temperature at noon, 28°. Much water-sky in all directions. Air very damp and raw. We all slept very well last night, being both warm and comfortable. Fog and clouds thick.

During the afternoon the boats were mounted on the sleds and got ready for hauling. Between times, we shifted camp further to the westward, as we were too near the edge of the floe in case of accident. Placed Chipp's tent to the rear and to windward, that he might not be kept awake by the "snorers," as was the case last

night. Then moved all our boats to the front of the tents, and the provisions to the front of the boats, and had our supper in our new location.

We carried out of the ship all the drinking water we had on hand, and made it last until Sunday night; but now we are, of course, down to what we can scrape up from the ice. We select the oldest and highest hummocks, and scrape off the broken down crystals when we can find them, but of course the sun has not had power enough yet to do any great amount of melting.

The snow, or rather ice, *is fresh to the taste*, but the doctor, by a nitrate of silver test, finds it much too salty. However, we cannot help ourselves, and must with lime juice, which we take daily, try to avert the danger. Just now we are living royally on good things, and not working very hard, and we are in glorious health, except for some occasional touches of the old lead poisoning suspicion. Temperature at eight P. M. 18° and very damp. Wind N. E. At ten P. M. set the watch and piped down.

June 14th, Tuesday. — Called all hands at seven A. M., breakfasted and turned to by nine A. M.; then set two men from each tent, under Melville's direction, to get together our sixty days' provisions, and to strip off all wooden packages. The doctor, with one man, set to work dividing up (and fortifying) the lime juice among three water-breakers. Dunbar, with two men, overhauled and relashed the three McClintock sledges, to get them ready for stowage and loading. The rest of the men continued the work of making extra foot nips, reducing sleeping-bags, and making such additions to their comfort as were possible. Our sick-list is not progressing favorably. Alexey was very sick all night with stomach-ache, groaning all the time, and vomiting

violently at three A. M. Kuehne is quite sick, and both he and Alexey are laid up in their sleeping-bags. Chipp seems brighter, but as he did not get much sleep during the night he cannot be said to have improved.

Weather clear, bright, and pleasant; wind N. N. E.; temperature at ten A. M. 19° in the shade (minimum during the night 12°). A few cloud-streaks, cirro-stratus, to northward. To southward the openings in the ice are shown by light masses of thin, bright fog, sweeping away before the wind. Barometer, 30.37 at 33°, but I am a little suspicious that my pocket barometer is out of order. Latitude by meridian altitude at noon, 77° 16′; temperature, 23° in the shade (running to 30° in the sun). At four P. M. wind not changed, and temperature 24° in the shade. Large masses of fog and soft "steam" are continually rising in all directions and sweeping away before the wind. It would almost seem to indicate a general breaking up of the ice.

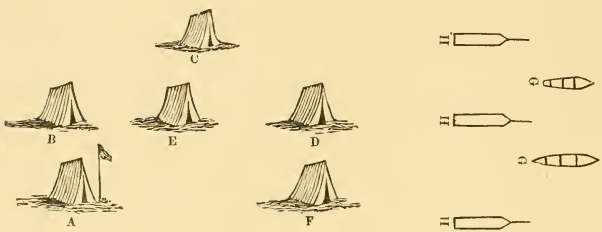
Dinner at one P. M. Turned to at two, and immediately commenced loading up five sleds with provisions. Divided our 3,960 pounds pemmican and 200 gallons alcohol among the sleds, and then, having our weekly ration-bags ready, we switched off to fill them.

The daily allowance of tea is	1 oz.
" " " coffee is . . .	2 oz.
" " " sugar is . . .	2 oz.

To get our weights exactly, we have to start on an ounce weight and the doctor's scales, and work up by a number of Remington cartridges to a pound. Two empty meat tins tied to the end of a stick suspended by its centre made our scale, and we rattled along our weekly rations until supper time (seven P. M.) came.

Sights obtained at six P. M. place us in longitude

153° 58′ 45″ E., — a drift since the 12th of thirteen and one half miles N. 84° W. Thus far we are getting along very well. Everybody is bright and cheerful, and our camp has a lively look. Its arrangement is as follows: —



Plan of the Camp on the Ice.

A. Headquarters. B. De Long.
C. Chipp. D. Melville.
E. Danenhower. F. Ambler.
G, G, G. Boats. H, H, H, H. Sleds.

After supper no work was done, except putting two rifles apart for each tent (ten in all), which are to be carried in the boats — four in the first cutter, four in the second cutter, and two in the whaleboat.

Wind at eight P. M. light N. N. E. Temperature 17° shade. Piped down at ten P. M.

June 15th, Wednesday. — Called all hands at seven. Breakfasted at eight. Turned to at nine. At eight wind N. E. (mag.). Temperature, 23° shade. Weather dull, gloomy, and foggy, but after ten A. M. it cleared away to a bright, sunshiny day. The night has been cold, the minimum pin showing 10°. I for one did not sleep well, having found it impossible to keep my shoulders covered by my sleeping-bag, but everybody else seems to be all right and to have slept well.

The sick are as follows: Chipp is better, he says; has slept well, and feels bright. Danenhower goes

around with his game eye darkened, and does a number of things, but of course I can assign him to no regular duty. Alexey has had a bad night, and is quite sick this morning. Kuehne still remains shut up in his tent. During the forenoon we were engaged in bagging as much tea, coffee, and sugar as possible, and in dividing the weights among our five sleds. This was completed by eleven A. M., and we then set to work to lash and secure the loads.

The distribution of weights was as follows: —

No. 1.	No. 2.	No. 3.	No. 4.	No. 5.
765 lbs. Pemmican.	720 P.	720 P.	720 P.	720 P.
40 gals. Alcohol.	40 A.	40 A.	40 A.	40 A.
36 lbs. Liebig.	36 L.	—	—	18 L.
61 lbs. C. L. Sugar.	—	—	—	61 S.
60 lbs. X. C. Sugar.	—	—	—	—
4 Bags Bread.	4 B.	4 B.	4 B.	2 B. Br.
30 lbs. G. Coffee.	30 Coffee.	—	30 R. Coff.	—
90 lbs. Tea.	—	—	60 G. Coff.	—
10 lbs. X. C. Sugar.	—	—	—	—
1,659 lbs.	1,318 lbs.	1,252 lbs.	1,342 lbs.	1,325 lbs.

On the ice yet 30 lbs. roast coffee, 30 lbs. ground coffee, 1 bag bread, which must go in the boats.

Still short of sixty days' provisions, viz.: 315 lbs. pemmican, 43 lbs. tea, 55 lbs. sugar, 37 lbs. coffee.

We are, of course, leaving behind us many provisions, and our two dingys, as well as one St. Michael's sled. As our progress will necessarily be slow, I am of the opinion that each encampment for a week after our start will be near enough to our present location to enable us to send back a dog sledge each halt, to bring forward our supplies for the succeeding twenty-four

hours. In this case we shall not break in upon our packed sledges.

Dinner at one P. M., turn to at two P. M., sleds all lashed; and I notice No. 2 (Chipp's) has a sled flag already mounted with the name "Lizzie."

Upon calling Nindemann's attention to our having none, he informed me that one was under way, and that he should like to name it "Sylvie," to which I had naturally no objection. Sights to-day place us in latitude N. 77° 17′, longitude E. 153° 42′ 30″. A drift since yesterday of three and three fourths miles N. 70″ W. Temperature at six P. M. 19°. Wind N. E., force 2.

During the afternoon I issued the following order: —

U. S. Cutter Jeannette.
On the Ice, Lat. 77° 17′ N., Long. 153° 42′ E.
Arctic Ocean, June 15, 1881.

ORDER.

When a start is made to drag our sleds to the southward, the clothing allowance for each officer and man will be limited to what he actually wears and the contents of his packed knapsack. Each may dress in skins or not as he pleases at the start, but having made his choice, he must be ready to abide by it. Extra outside clothing of any kind (except moccasins) cannot be taken. The contents of the packed knapsacks are to be as follows: —

2 pairs blanket nips, or duffle nips,
2 pairs stockings,
1 pair moccasins,
1 cap,
2 pairs mittens,
1 undershirt,
1 pair drawers,
1 skull-cap,
1 comforter,
1 pair snow spectacles,
1 plug tobacco,
1 pipe,
20 rounds ammunition,
24 wind matches.

Soap, towels, thread and needles at discretion.

An extra pair of moccasins (making three pairs in all) with its foot nips may be carried in the sleeping-bag, but nothing else is to be put therein.

Each officer will see that the allowance is not exceeded in any particular.

Sled No. 1. Stores, sleeping-bags, tents, knapsacks, and mess-gear, in first cutter.

Sled No. 2. Ditto, ditto, in second cutter.

Sled No. 3. Ditto, ditto, in whaleboat.

Sled No. 4. Ditto, ditto, in second cutter.

Sled No. 5. Ditto, ditto, in whaleboat.

If at any time we go in the boats, —

Sled crew No. 1 goes in the first cutter.
" " " 2 " " " second cutter.
" " " 3 " " " whaleboat.
" " " 4 " " " first cutter.

Surgeon, Mr. Cole, and cabin steward in whaleboat.

Remainder of No. 5 in second cutter.

Further orders or modifications of the above will be given as necessary. Very respectfully,

GEORGE W. DE LONG,
Lieut. U. S. Navy, Commanding Arctic Expedition.

An almost cloudless sky, and, in consequence, a broiling hot sun shining down on the floes makes us very uncomfortable. We are all terribly sunburned, and our noses, lips, and cheeks are beginning to get sore. Our eyes are all right yet, however. A few cirro-stratus streaks to southward and southwest, but I do not want the wind from those directions until I can get to the open water.

Supper at seven, lime juice at 8.15, and our customary pipe down at ten.

June 16th, Thursday. — Called all hands at seven, breakfasted at eight, turned to at nine. Engaged during forenoon in making foot nips and making sure our boat accessories were complete.

In anticipation of our sleeping-bags not being warm enough, I ordered each officer and man to take a half blanket also, to be stowed within the sleeping-bag. At 4.30 P. M. I started Mr. Dunbar ahead to the southward to seek and make out a good road, and I then prepared the following order: —

U. S. Cutter Jeannette.
On the Ice, Lat. N. 77° 18′, Long. E. 153° 25′.
Arctic Ocean, June 16, 1881.

ORDER.

We shall start to the southward at six P. M. Friday, June 17th (Saturday, June 18th), and our traveling thereafter is to be done between six P. M. and six A. M,

The order of advance will be as follows: —

1st. All hands drag the first cutter. Dogs drag the No. 1 sled.

2d. Starboard watch drag the second cutter. Port watch drag the No. 4 sled. Dogs drag the No. 2 sled.

3d. Port watch drag the whaleboat. Starboard watch drag the No. 3 sled. Dogs drag the No. 5 sled.

Alexey's three dogs will drag the St. Michael's sled. Kuehne, Charles Tong Sing, and Alexey, to report to and accompany Lieutenant Chipp.

The daily routine will be as follows: —

Call all hands	4.30 P. M.
Breakfast	5.00 "
Break camp	5.40 "
Under way	6.00 "
Halt	11.30 "
Dinner	Midnight.
Pack up	12.40 A. M.
Under way	1.00 "
Halt, pitch camp	6.00 "
Lime juice	6.00 "
Supper	6.30 "
Set watch, pipe down, turn in	7.00 "

Course S. by E. one half E. (magnetic).

Before lighting any alcohol lamp, the stove is to be placed in a hole in the snow to prevent loss of heat, and a passage way cut to supply air for the flames. The cooks will be changed every Saturday. They are to get meals as rapidly as possible after each halt, going at once to St. Michael's sled for alcohol, and to be sure that the alcohol tin is tightly closed up before returning it. Particular care must be taken in getting ice and snow for cooking. The tops of the highest hummocks only must be used, and scraping is not to go more than an inch below the surface. It will be the duty of the man whose next turn comes to cook to collect the snow or ice, and assist the cook of the week.

The work of unloading and reloading will be done by the remainder of each sled crew. As long as it is possible to do so, the St. Michael's sled will be sent back each morning to bring up provisions now in this camp, in order that we may not have to break in upon our sled stores. But when we do commence upon our loaded provisions the following will be the ration table:—

BREAKFAST.	DINNER.	SUPPER.
4 oz. pemmican,	8 oz. pemmican,	4 oz. pemmican,
1 oz. ham,	1 oz. Liebig,	1 oz. tongue,
3 pieces bread,	½ oz. tea,	½ oz. tea,
2 oz. coffee,	⅔ oz. sugar.	⅔ oz. sugar,
⅔ oz. sugar.		1 oz. lime juice,
		¼ lb. bread.

GEO. W. DE LONG,
Lieut. U. S. Navy, Commanding Arctic Expedition.

During the afternoon the sleds and boats were each supplied with their flags.

The first cutter Jeannette carries my silk flag.
The second cutter Hiram carries flag Hiram.
The whaleboat Rosey carries flag Rosey.
No. 1 sled carries square blue flag Sylvie. Motto, *Nil desperandum.*
No. 2 sled carries swallow-tail flag Lizzie.

No. 3 sled carries flag.

No. 4 sled carries white flag, red Maltese Cross. Motto, *In hoc signo vinces.*

No. 5 sled carries flag Maud. Motto, *Comme je trouve.*

At eight took our lime juice. Then called all hands to muster and read the foregoing order, after which we hauled up the light dingy and left her alongside the iron dingy. We are now, I believe, all ready, and will start at six P. M. to-morrow. Loaded the St. Michael's sled with twenty gallons lime juice in two ten-gallon breakers, ten gallons alcohol in whiskey keg, instrument box, medicine box, two demijohns whiskey, five rubber bottles lime juice, surgical case, Winchester rifle, and twelve cartridges in its magazine, box chronometer Negus No. 1630.

Latitude N. 77° 18′, longitude E. 153° 25′; temperature 20°. Division of officers into watches: —

STARBOARD WATCH.	PORT WATCH.
De Long,	Chipp,
Danenhower,	Melville,
Ambler,	Dunbar,
Collins.	Newcomb.

June 17th, Friday. — Called all hands at seven. Breakfasted at eight. Turned to at nine. Loaded up our second St. Michael's sled with provisions and started it ahead to our furthest guide-flag. Tightened up lashings of all sleds, and put in soft wedges of wood between alcohol tins. Prepared one of our records to leave in a water-breaker closed up, in case it is ever picked up. (The dates are correct dates for our longitude.)

U. S. Cutter Jeannette.
On the Ice, Lat. N. 77° 18′, Long. E. 153° 25′. .
17*th June*, 1881.

We break camp and start to the southward over the ice to morrow evening, Saturday, June 18th, hoping with God's blessing to reach the New Siberian Islands, and from there make our way by boats to the coast of Siberia. The Jeannette was beset in the pack ice of the Arctic Ocean on the 5th day of September, 1879, about twenty-five miles east of Herald Island, and between that date and the 12th day of June, 1881, was drifted to the northwest, reaching, finally, latitude N. 77° 15′ and longitude E. 155° 0′. On the last named date she was crushed by a coming together of heavy floes after a slight opening in the ice, and sunk at four A. M., June 13th. We had abandoned her and camped on the ice at eight P. M., June 12th, having saved about eighty days' provisions, five boats, all tents, and other traveling gear, and more than enough clothing, arms, and ammunition. Our party consists of the following named persons, no death having occurred since our leaving the United States [here comes a list of all hands], and are all in fairly good health, no scurvy having made its appearance in our midst. I say fairly good health, because there are two officers (Lieutenant Chipp and Master Danenhower) and three men (Alexey, Tong Sing, and Kuehne) under the surgeon's charge for various debilitating causes. We have discovered and named two islands, landing upon the second one a party in charge of Mr. Melville; May 21, 1881, Jeannette Island, in latitude N. 76° 47′, and longitude E. 158° 56′; and May 25, 1881, Henrietta Island, in latitude N. 77° 8′, longitude E. 157° 45′. Excepting these islands we have seen nothing but ice since losing sight of Herald Island in March, 1880. The ice in this ocean is of the same character as that encountered north of Smith's Sound by Captain Nares, and as the prevailing winds are from the southeast this ancient ice moves slowly along to the northwest. There are no currents which are not caused by the wind prevailing at the time. Our lowest temperature in winter of 1879–80 was minus 56° Fahr., and in winter of 1880–81 mi-

nus 50°. Our highest temperature in summer 1880 was plus 46°, and thus far our highest has been plus 30°.

This month seems to be a cold one, — plus 20° to plus 25°, — and I am inclined to think this will be a cold summer. There has never been a time that we could move a ship's length since our first besetment.

We have remained in camp since the loss of our ship in order to pack our sledges, make all our arrangements for proper traveling, and recruit our sick. We start with sixty days' provisions, and besides ourselves we have twenty-three dogs.

GEO. W. DE LONG,
Lieut. U. S. N., Commanding American Arctic Expedition.

This I had carefully sewed in a piece of black rubber, and placed it in an empty boat-breaker, which left on the ice may get somewhere.

Dinner at noon. At one P. M. piped down, — all hands lying down to get some sleep before starting.

At five P. M. called all hands again, and as soon as possible had supper, or, as it ought to be called now, breakfast. Broke camp at 5.50 P. M., and though six was the time for starting it was 6.20 P. M. before we got under way. All hands started with the first cutter, while the dogs, managed by Aneguin, attempted the No. 1 sled. The cutter went easily enough, but No. 1 sled was more than a match for our dogs. Occasionally stopping, we lent a hand to start the sled from a deep rut, and, finally, seeing the necessity of more force, I detached six men from the cutter and went back with them to help the No. 1 sled, and to this the origin of our day's trouble may be referred. When I sent Mr. Dunbar ahead yesterday it was to plant flags for our first day's journey, and upon his return I could see but three flags, and supposed there were no more. Melville accordingly dumped the provisions at this third

flag, as the end of our day's journey. Upon the cutter reaching the third flag Melville wanted to stop, but Dunbar informed him there was a fourth flag, and that *that* was the end of the first day's journey. Of course I could not be everywhere in a road one and a half miles long; and Melville, in his uncertainty about my wishes, had to be guided by Dunbar's idea, so that the first cutter, instead of halting by our provisions, was carried on beyond them, to my extreme annoyance when I learned of it.

Meanwhile the six men and myself went back to the No. 1 sled, and by almost superhuman exertions got it along a quarter of a mile, and then seeing Chipp and the hospital sled hanging behind waiting for it, I sent him ahead with the invalids to go after the first cutter. The six men and myself then got the second cutter and whaleboat along to where we had left No. 1 sled, and while wondering what kept Melville and the men away so long (they should have been back long since), I saw that Chipp had come to a stand-still. Hastening toward him I found that the ice had opened, and that our remaining effects would have to be unloaded and ferried over.

Here was a nice fix. Sending back at once for the light dingy, I got Chipp and the hospital sled over, and sent him on to hurry the cutter party back. Time was slipping away, and all that the six men and myself could do, with the assistance of the dogs, was to get the second cutter and whaleboat, with No. 1 and No. 2 sleds, as far along as the ferry.

By ten P. M. the first cutter party returned, and we at once launched the two remaining boats, hauled across and got them upon the ice on the other side. To avoid unloading the sleds, a road was sought and found higher

up, when, by filling in with some large pieces of ice, we managed to get an uncertain way of crossing the opening lead. While so crossing we doubled under the right runner of No. 1 sled, and had to stop lest we should ruin it. No. 2 and No. 5 each broke a runner, the tenons of the upright breaking short off. And in fine, by the time we had crossed this lead, Saturday, June 18th, 12.10 A. M., we had three disabled sleds, were already an hour late for our dinner, had our provisions half a mile further on, and the mess gear and sleeping gear of No. 1 sled a half mile further still. However, there was no help for it. So, buckling to our two boats we started on, and by 1.30 A. M. had reached the black flag and our provisions. Here I ordered a halt and dinner cooked. On the way back from the first cutter the doctor had encountered Chipp and the invalids hobbling along pretty well exhausted, and after administering a dose of whiskey to Chipp had recommended him to stop at the third flag, where the provisions were. But to make our confusion more complete he had not done so, but had continued on to the first cutter. Hence I had to move all hands on to him or bring him back to us. Deciding the latter to be most feasible I sent Ericksen ahead with a dog sledge to bring No. 1's mess gear back, and with orders for the invalids to come back riding upon the dog sled, if they could not walk. (During the advance with the first cutter Lauterbach had doubled up with cramps, and was left where the cutter stopped in Newcomb's charge. Lee frequently was falling down also suffering with cramps, for which we can assign no cause except lead poison.) Well, I got all hands together by two A. M. and at dinner, except No. 1 sled, which did not get dinner until three A. M.

As soon as two, three, four, and five sled crews finished dinner, I sent Starr, Bartlett, and some dogs with St. Michael's sled back to our old camp to bring forward provisions; and Mr. Cole, with the remainder of our dogs ahead, to bring back hospital sled. And when No. 1 finished dinner I took all remaining hands and went back to the ferry, unloaded entirely our broken sleds, and from the two sound ones removed everything but pemmican and alcohol; and then, eight of us to each sled, we dragged them up to our camp, reaching it by six P. M. Cole, meanwhile, had arrived with the hospital sled, and Ericksen took his dogs and went forward for No. 1's tent and sleeping gear. At seven we had supper, and at eight A. M. set the watch, and piped down, a weary lot of mortals. Weather all day overcast.

Temperature at eight P. M. 21°. Wind northeast. Weather overcast, and very raw and damp. The fog seems to penetrate to the bone. All hands seem bright and cheerful. None of us are stiff after our hard work, strange to say, and have slept splendidly. The sick are as follows: Chipp used up about the legs; has slept some, but only in the early part of the day. Alexey, better; steward, better; Kuehne, better.

Got up the first two sled loads, and one broken sled, by 9.30 P. M., and immediately sent off the relief party for two more sled loads. Sent Mr. Dunbar ahead to the southward again to make out a road, and our first party set to work repairing our sleds. Found to my unpleasant surprise that the whaleboat's sled was broken in the after cross-pieces; dismounted the boat and set about repairs.

Our experience thus far in traveling has not been very encouraging. We have had such terrific roads, such soft and deep snow, and such ugly ice openings,

that our difficulties have been increased. The necessities of the case have led to overloading the sleds, and though they would have gone well enough on smooth ice, the snow would stop these or any other sleds — twenty-eight men and twenty-three dogs laying back with all their strength could only start our sixteen hundred pound sled a few feet each time; and when sliding down a hill it would plunge into a snow-bank, it was terrible work getting it out. Though the temperature was between 20° and 25° we were in our shirt-sleeves, and perspiring as on a hot summer day. I see very clearly that we must run with lighter loads, and go over the same ground oftener. I hoped to be able to advance our boats and provisions in three separate hauls, but I must be satisfied if we now do it in six.

By midnight we had got up all our sled loads left at the ferry, and sat down to our dinner.

June 19th, Sunday. — At one A. M. turned the hands to and resumed work on the sleds. I started back the St. Michael's sleds and dogs, with Starr in charge, to our old camp to bring forward the remainder of our provisions.

Loaded up Melville's sled with his pemmican and alcohol only: 720 lbs. pemmican, 320 lbs. alcohol, — 1,040 lbs. instead of 1,342 lbs., as before.

Finding that the second cutter's sled was beginning to spread, dismounted the boat and set to work tightening the lashings. After having tightened the lashings of No. 1 sled, packed upon it seventeen cans pemmican, 765 lbs.; eight cans alcohol, 320 lbs.; one bag tea, one bag coffee, one bag sugar, one half bag sugar, one half bag tea, thirty-six lbs. Liebig. And upon the doctor's No. 5 sled, all the bread except one large bag. Upon Danenhower's and Chipp's sled packed only their

pemmican and alcohol. At six A. M. had supper; at 7.30 A. M. had lime juice; at 7.40 A. M. had prayers; and at eight A. M. piped down.

At eight P. M. started ahead the second cutter, No. 1 sled, and hospital sled, while Starr and Ericksen ran ahead a St. Michael's sled, with provisions. All, this time, to stop at first cutter, No. 3 sled crew finishing lashing on the whaleboat while I remained in the rear to hurry things forward.

I have changed our procedure to the following: Chipp, Danenhower, and the other sick go along with the medical sled under the doctor's charge, and reaching our halting place, stop there. Melville, with the men, conduct the boats and sleds to the front, and I load and dispatch dog sleds and bring up the rear. This programme would have worked very well had not the ice opened after Melville got the second cutter and No. 1 sled to our new camp; and, consequently, when I, to relieve Ericksen, ran forward with the two dog sleds, we had a hard time in getting across the opened place. However, we got across and to the camp at noon, and I ordered dinner to be prepared for twenty-six, while I took back enough for the remaining seven, myself included, intending to eat it at our old camp. To my surprise, however, I met Melville half way with the whaleboat, which disarranged my plans somewhat. I called a halt, sent Melville with his men on to their dinner, ordered dinner to be prepared for my party of seven at the whaleboat, and going back to the old camp brought up to the whaleboat a load of provisions. This brought us to one A. M.

June 20th, Monday. — As soon as dinner was ready at the whaleboat we sat down to it, having the unprecedented luxury of a board for a table. Just at one I

heard Melville arrive at the camp, the last yo-heave-yup of Nindemann announcing that fact. At two A. M. we turned to and went back for the sled load of bread, while Ericksen went on to the camp. When we got as far as a crossing place beyond the whaleboat, though there was a smooth road and no provocation, our McClintock sled broke down, to my unmitigated disgust, one runner doubling under completely. We unloaded the bread and hitched on to the whaleboat, but could only get her as far as the crossing place. Here Melville and his party hove in sight, and they took the boat away in good style, leaving me to guard the bread. Soon Ericksen came along with his empty sled, and upon his return trip with a load, I sent the broken McClintock sled to the carpenter's hands. When Melville got into camp he went to work pitching tents by my order, and Wilson unloaded No. 3 sled and brought it back with the dogs to me. We then loaded one half of the bread, and by some filling in where the ice had opened we got it safely home. Bartlett then went back for the remainder, and got it up by five A. M. Ericksen by this time had made one more trip, and I now relieved him and Leach, sending back Boyd and Johnson for one more load before supper. Having left some leaking tins of alcohol in our old camp, I sent back an empty boat-breaker to be filled from them.

Supper at six A. M. Mr. Collins was added to our list of ineffectuals to-day with "a stitch in his breast," but seems all right again at supper. Last night we were somewhat inconvenienced in our tent by a wet lower blanket, and my sleeping-bag got wet. The snow and ice thaw from the heat we generate, and flow over our rubber blanket. With the snowy weather we have no chance to dry it, and have to take it as it is. Lime

juice 7.30 A. M. Pipe down eight A. M. at first cutter's camp, only one and one half miles from our first starting place of Friday, the 17th.

Called all hands at six P. M. Breakfasted at seven P. M. It has been *raining* steadily for the last eight hours, and I find the temperature up to 35°, and the wind still from N. E. Not caring to expose anybody to the weather, I sent around word that we should not start until the rain let up; and during the remainder of this day we sat around in our tents wet and uncomfortable, hoping for a change, and wishing for a little sun to dry our sleeping-bags.

At no time of the year is traveling worse than at present. In the winter or spring months it is, of course, cold and comfortless, but it is nevertheless dry. In autumn or late summer it is favorable, because the melted snow has all drained off the hard ice, and the traveling is excellent. But just now the snow is soft enough to sink into, and progress is almost impossible. And when a rainy day sets in, one's misery is complete. Even the dogs cower under the boats for shelter like hens, or snuggle up against the tent doors begging for admission. One comfort we have is, that this rain will melt and pack the ice, and, should a cold snap follow, freezing will make a good road.

On shore the pattering of the rain on the roof has a pleasant sound to those within, but out here it is far from pleasant. No fires, of course, except for cooking, and no place to dry clothes, and little streams of water, trickling down on you from the tent ventilating holes, make your own wetness more wet.

These halts and long camps have shown me that several of our party have been carrying more than I can permit. It is astonishing how many "little things that

don't weigh anything" have crept in, and it is equally surprising how great is their aggregate weight. I shall have one more clearing out before leaving this camp.

Dinner at midnight carries us into

June 21*st*, *Tuesday*. — Day opens with N. E. wind, a steady rain-fall, and a temperature of 35°. My pocket barometer has got down to 30.22″, but I still think it out of order. At 2.30 A. M. the rain ceased, and we resumed the work of repairing our St. Michael's sleds. Having finished repairs to the doctor's light McClintock sled, I sent it back with Boyd, Iversen, and Aneguin, to bring up a load of provisions from the last camp, which was accomplished by five A. M. Sent Mr. Dunbar ahead with four men to make a road where necessary, and to place flags. At 3.30 A. M. I took a narta[1] and nine dogs, and with Kaack carried forward 450 pounds pemmican and 50 pounds Liebig extract.

Mr. Dunbar had cut two roads, — one through piled up hummocks, and another through a broken ridge, — but generally speaking our day's work to-morrow will be easier than any of the preceding days. There is one ugly place where the ice has cracked and opened to a foot in width, and if it opens further, requiring bridging or ferrying, we shall again have our hands full. Though the rain has ceased, the sky remains overcast and threatens more moisture. The temperature remains at 35°. Wind E. N. E.

Supper at six. Pipe down at eight A. M. Called all hands at six P. M. Breakfasted at seven, and at 7.50 P. M. got under way. Sent Melville ahead with Nos. 1 and 2 sleds and two dog sleds (one narta, and one No. 5), and Ericksen and Leach with the other narta to the old camp to bring forward remainder of stores. Left

[1] A sled. — Ed.

the camp pitched, and sleeping gear and mess gear convenient to the boats, in the event of our having to dine here. The doctor with the sick remained, of course, with the tents.

By 8.30 P. M. Melville and his party and the two advanced dog sleds have come back to camp, having left the first load at the crack in the ice mentioned this morning, it having widened as I feared during our sleep. By nine the second installment was sent along, and by 9.30 the camp was broken, and the whaleboat, with two more dog loads, under way.

Mr. Dunbar and two men remained ahead to try to get a large piece of ice down to bridge the opening. I had instructed Melville, in case Dunbar had managed to bridge the opening, to get all our traps through the gap, and as he did not return for the first cutter, I concluded this was being done. At 11.30 P. M. Leach and Ericksen arrived from our old camp with the dog sled and half the remaining provisions, the balance being left with the dingy some distance back. As I was anxious to get forward to see the state of things ahead, I sent Ericksen and Leach back with three dogs for the dingy, and placing No. 1's mess gear in the dog sled, I started on with three more dogs. This brought us to —

June 22d, Wednesday. — I hardly had gone one fourth mile when I came to an ice opening, and in spite of my strongest efforts, the dogs scattered across some lumps, capsized the sled, dragged me in, and sent all my mess gear flying, having accomplished which, and reached the other side themselves, they sat down and howled to their hearts' content.

Floundering across, I managed to collect my scattered property and get it safely over, and then righted and dragged out the sled. As soon as resistance was re-

moved, away went my dogs again. Reaching the ice opening which had occasioned the delay at one A. M., I found Melville afloat and adrift on an ice-island with all boats and sleds, nothing having been got through the gap. I shouted to him to start dinner, and I would join him later when the dingy came up. But he managed to get a cake of ice dragged to me, and I ferried across with my dog team and mess gear. At once we set to work getting floes in place as bridges, and before sitting down to dinner we had two sleds and a lot of dog loads through the gap on to the heavy ice beyond. At 1.30 sat down to dinner, and at two Ericksen and Leach arrived with the dingy. At 2.20 A. M. turned to and ran the whaleboat and second cutter through the gap. Then sending Melville back with the party for the first cutter, Ericksen, Leach, and myself pushed on two dog teams with pemmican and bread as far as the flag which I left a load at yesterday. When we got back to the gap the doctor and the sick were adrift, the ice having opened out during our absence. Dragged cakes of ice down, and made a crazy bridge over which the sick walked, and then we got the medical sled across, and after bridging, dragging, digging, and filling in, by six A. M. we had everything, first cutter included, through the gap and on the hard ice.

Melville had to launch the first cutter and paddle her part of his way, but he got her up in time to take a share in the work of the rear-guard.

At 7.30 A. M. we had supper, and a more tired and hungry set of mortals could not be found.

And so we got ready to bag, having come along about a half a mile in ten hours' hard work. At nine A. M. piped down.

At six P. M. called all hands. Breakfasted at seven.

Lime juice at 7.30, and at eight started off Melville and Nos. 1 and 3 sleds, while Ericksen and Leach took on two dog sled loads.

Weather a trifle pleasanter. Much fog prevails, through which the sun glimmers and blinks like a drunkard's eye.

Sick, so so. Chipp has had a bad night, and is much the worse for wear this morning. Alexey is so easily upset by a little stomach-ache as to lose his grip altogether. Lauterbach looks as if he were going to attend a funeral any moment, and must keep his countenance to the proper point of solemnity. Danenhower's trouble is, of course, his blindness. Mr. Dunbar begins to wear again, and I have cautioned him to be careful of himself for a few days, and not to exhaust all his strength.

By 8.45 Melville had returned from a little distance ahead, having broken a McClintock sled, or rather disabled it; for we at once set to work to right the turned runner, and strengthen it with an oar lashed along the inside. No time was lost in sending along one more sled load, and at 9.15 Ericksen and Leach had started with another invoice drawn by dogs.

On this second trip unfortunately a runner of a McClintock sled doubled under, and had to be brought back for repairs. I kept Nindemann and Sweetman to do this, and sent on the boats and continued the trips of the dog sleds. At 10.30 I sent on the doctor with the sick, and at 11.30 everything else having gone ahead, Nindemann, Sweetman, Aneguin, and myself, with some dogs, dragged along the dingy and a few cans of provisions, and reached the halting place by 11.55 P. M.

For the first time in our experience we were able to

reach in one half day the indicated place, have dinner on time, and get ready for a new start after dinner. This was because we were on solid ice, and had no openings.

June 23d, Thursday. — Sat down to dinner at 12.15 A. M., and turned to at 1.15. The weather remained foggy, and we had a perfect calm. Running ahead a dog team I found we could get on about a mile further before being stopped by rough ice, and the word was given for a general advance. By four A. M. everything was forward. Meanwhile, seeing a good-looking lead Mr. Dunbar and I got in the dingy and followed it up, but it turned soon to the northwest, and I gave up the idea of taking to the water. Just where we are it seems impossible to proceed without the occurrence of an opening. A small opening alongside of our track terminates at our camp, unfortunately, as it tended in a southerly direction. We made use of it to float our boats down for an eighth of a mile.

At 2.30 the sky cleared, and the sun came out brightly. A few cirrus clouds were all that could be seen, the fog rolling away as if by magic before a light N. E. breeze. At five A. M. the temperature was 25½°, and at seven A. M. 26½°, and our camp being pitched we prepared to bag, having supper at six A. M. This is the first really good day's work, and yet I do not think we have made good more than one and a half miles, though working seven hours steadily.

To the southward of us the ice is terribly confused, and presents no chance for an advance as yet. But no one can tell what six hours may bring forth, and when we get up again we may see something. I attempted to get our position by a Sumner, but the change of bearing of the sun in the two hours gave me

hardly angle enough for a good intersection. The longitude is about E. 152°.

At 8.30 A. M. piped down. At six P. M. called all hands. Breakfasted at seven. Sent Mr. Dunbar ahead through the most likely looking part of the rough ice in front of us to try to find a road. At eight started ahead on our day's work, and, to save unnecessary detailed description, I will here mention once for all our manner of procedure.

The daily routine and manner of progress marked out on the 16th have had to be abandoned for several reasons, the principal of which was the impossibility of telling one minute how the ice would be the next in disarranging plans; and second in importance, because men *cannot* do this kind of work ten and a half hours each day without breaking down. By and by, perhaps, when our loads are lighter, we may be able to do it, but just now it is out of the question. Our route having been indicated by several black flags placed after a halt, or before a start, Mr. Dunbar goes ahead at eight P. M. to make sure that no bridges have become necessary in the mean time. Then right after him goes Melville, with nearly all hands, dragging the heavy sleds. No. 1 (already christened the Walrus) requires all his force, but generally he can start two of the others at one time. Ericksen and Leach run two dog sleds, trip after trip, all day; while I load, and occasionally run one myself ahead, to mark progress and indicate the route. The loaded sleds being up, Melville's party comes back for the boats. I then start the doctor ahead with the sick, to go as far as the heavy sleds have been dragged. I then get the medical sled and run a load up to the same place. By this time the boats are up, and eleven P. M. has arrived, and I break off the cooks to get din-

ner, while Melville and his party drag the sleds ahead another stage. Then there is midnight, and —

June 24th, Friday — Dinner succeeds. At one we turn to, drag the boats to where we left the sleds; then along goes the doctor and the sick to that place; then ahead go the sleds again; again the boats, always the dog-sleds, and finally at 5.30 or six I bring up the rear-guard. We prepare for supper, pitch camp, and the dog-sleds get up with the last load. At seven we sup, at eight pipe down, to be called at six P. M.

We therefore haul nine hours a day, sleep or rest ten, meal hours three, and the other two hours are occupied in pitching camp, serving out and cooking food, breaking camp, and marking road ahead. There is no work in the world harder than this sledging; and with my two line officers constantly on the sick-list, I have much on my hands. In Melville I have a strong support, as well as a substitute for them, and as long as he remains as he is — strong and well — I shall get along all right. The doctor is willing and anxious to pitch in and haul like a seaman, but I consider him more necessary to the sick, and have directed him to remain with and accompany them.

To-day we have done very well, having made one and a fourth miles (estimated), good. The ice opened on us twice, and gave me and the dog-sleds some trouble. The heavy sleds had gone on before the ice opened. One dog sled got half overboard, and we had to cut the dogs adrift to save them from being drowned, while two of us held the sled back. The prospect for our next start is encouraging. We are now on a piece of old ice which seems to extend for several miles yet. To-day has been unusually disagreeable on account of the amount of water on the surface of the ice. Frequently

the men broke through over their knees, and dragging, under these circumstances, is hard work. In pools here and there around us water has formed, and though the lower temperature freezes it at night, the sun thaws the ice in the middle of the day, and we suddenly flounder in. A month later this water will drain off to the sea. The weather was foggy at our start last night, but though the fog disappeared soon after, the sky was covered with cirro-cumulus and cumulo-stratus clouds, effectively blocking my attempt to get the latitude at midnight, consequently we are still in the dark as to our position.

Chipp is very weak, and just strong enough to be able to walk from place to place by easy stages. I am very seriously disturbed about him. Lauterbach was restored to duty yesterday evening. Alexey still sick, unable to keep anything on his stomach.

Starr informs me that he has often come across written papers in our provision packages, and he has brought me this one which he found yesterday with some coffee: —

"This is to express my best wishes for your furtherance and success in your great undertaking. Hoping when you peruse these lines you will be thinking of the comfortable homes you left behind you for the purpose of aiding science. If you can make it convenient drop me a line. My address,

"G. J. K.

"10 *Box*, *New York City*."

At the doctor's suggestion I to-day issued an order that all salt now in our possession should be saved, and none used until further orders. Each boat box has two tin canisters containing two pounds each, and that gives us twelve pounds altogether.

We used the last of our chicken and turnips to-day,

and now we come down to our traveling rations, nearly. Chocolate, cocoa, and cheese we still have, in addition, and so long as carrying them does not stop our way we shall take them with us.

Piped down at 8.30 A. M.; called all hands at six P. M. Weather foggy. At seven breakfasted; at eight started ahead sleds, — Dunbar and I going ahead to mark out a road. Much water under the surface crust; broke in frequently to our knees. Placed two flags half a mile south of this camp, and sent doctor and sick ahead to this spot at 9.30. We did not succeed in getting all our gear up last march, and have to send back for six sled loads. By midnight everything was so well along that —

June 25th, Saturday, found us getting ready for dinner, to which we sat down at one A. M., turning the hands to at two A. M. At midnight I had got a meridian altitude, which to my amazement gave me a latitude of N. 77° 46′. There was no mistake in the observation, and I went over my figures a half dozen times to find any error. But each time 77° 46′ was the result. I overhauled my sextant, but that was all right, and my amazement increased. To start in 77° 18′ N., travel south a week, and then find one's self twenty-eight miles further north than the starting point is enough to make one thoughtful and anxious. For a long time I pondered, and for the moment was inclined to attribute the strange result to some extraordinary refraction, but upon looking back at my rejected Sumner of the 23d I found that the intersection gave 77° 46′, and so was more anxious than ever. At 4.30 A. M. and 7.30 A. M. I got another Sumner, and this, plotted, gave me 77° 43′ for a latitude. My rough means of making a skeleton chart accounted in part for the difference from the

lower meridian altitude. More anxious than ever, I determined to sit up until noon and get the upper meridian altitude before committing myself to plans for the future.

This day's work has not been as satisfactory as yesterday's. We have advanced about three quarters of a mile. Ice openings bothered us, and it was not until eight A. M. that we had our supper at camp.

The weather was calm and foggy until the beginning of the day, and then it cleared rapidly away as the temperature fell to 22°, and a light west air sprung up. By eight A. M. the temperature was 28°, and the west air continued freshening to a light breeze. The sky was one half covered with cirro-cumulus clouds moving east.

We camped on an old piece of ice, and here we were soon brought to a stand. The country to the southward of us is terribly wild and broken. Mr. Dunbar, whom I sent ahead to reconnoitre, reports that it is such a jam and so full of holes that he could not crawl over it. However, *Nil desperandum.* Got soundings in twenty-five fathoms.

Chipp has become alarmingly weak. After walking one third of a mile to the halting place for dinner, he was completely exhausted, and though he remained on or in his bag until six A. M. (seven hours after), he was unable at first to get on his feet when we tried to take the hospital on to camp. Being assisted to stand he was clearly unfit to walk, and to his great mortification was compelled to accede to our request to be carried on in a dog sled. How are we to get him through?

At noon I obtained a meridian altitude, and this gave me latitude 77° 42′, and of this at least there is no doubt. My Sumner of this morning was accurate, and

my midnight observation was out only by the greater refraction of such a low altitude. I therefore accept the situation, and shall modify my plans to this extent. Instead of making a south course I shall incline more to southwest, for as the line of our drift is northwest, a southwest course will cross it more rapidly than a south one, and bring us quicker to the ice edge.

I turned in at one P. M., a fog creeping up with the west wind. I had piped down the men at 9.30 A. M., with orders to call all hands at seven P. M. This was done, but from a desire not to disturb me, no move was made toward getting alcohol until eight P. M., when I became aware that something was amiss and roused up to set it straight. In consequence we did not get breakfast until 8.45 P. M.

I find this morning my hands were so badly sunburned before our halt as to be now swollen and painful. A little cerate, however, soon made them easier.

Such a rough country as we have before us requires more careful examination than a short run ahead can give; and I have therefore sent Mr. Dunbar to seek a road out of our difficulty, while I let the camp remain "on their oars." After our hard day's work of yesterday, this additional rest is welcome, and if a good road is found we can make a long step this afternoon. At the same time there is no loss, for Ericksen and Leach have two or three loads yet in the rear to bring up.

CHAPTER XIII.

THE MARCH OVER THE FROZEN OCEAN.

26 *June* — 14 *July*, 1881.

Five Ice Bridges in One Day. — The Heat of the Sun. — Discouraging Progress. — The Reticence of the Captain. — Cheerfulness of the Men. — Beautiful Cloud Formations. — Vexatious Openings. — Paleocrystic Sea. — Daily Fog. — Wild Geese. — The Water. — Wet Beds. — Uncomfortable Dinners. — Hard Ice. — The Glorious Fourth. — Change in Character of Ice. — A Gale. — Half a Mile in Six Hours. — The Repeated Journeys. — Impossibility of Getting Position. — Needle Ice. — Cry of Land. — A Lost Bear. — Land and Water. — The Hard Work of the March. — Ferrying. — No Thoroughfare. — Condition of the Dogs. — Damage to Walking Gear. — Nearer Sight of Island. — Seal. — Mr. Dunbar goes to look for the Land.

JUNE 26*th*, *Sunday*. — Sat down to dinner at 12.15 A. M., and turned to at 1.15 A. M. Mr. Dunbar now returned, and I sent him to get his dinner, while with the bridge makers and two dog sleds I pushed ahead. Melville accidentally fell into the water and got wet to his waist, and during the morning's work the Walrus (No. 1 sled) fell in, sticking her nose well under the ice. However, she was dragged out. Though the road generally was better than yesterday, no less than five bridges had to be made, and consequently, when at 6.30 A. M. I halted and pitched camp, we had made good only one half mile south southwest. Before us, however, we seem to have a good road from south to southwest.

It has been blistering hot since midnight, though the thermometer marked only 23° *in the sun*. The sky was cloudless. A light S. S. W. breeze fanned along, but we all suffered from the heat. Our hands and faces are all swollen and blistered, and my hands are very painful.

At 7.30 A. M. had supper; at 8.30 A. M. read divine service, and at nine A. M. piped down; at six P. M. called all hands; at seven breakfasted, and at eight started ahead again. Dunbar first, road makers next, dog sleds third, and Melville, with the heavy sleds, last.

For breakfast had beef-tea (excellent), coffee, bread, and pemmican. By eleven P. M. the sleds and boats were advanced half a mile over a fairly good road, and the sick were sent to the front. A thick fog hid our flags, and I had to stumble and flounder along Mr. Dunbar's tracks to gain a place for marking a halt. I say the road was fairly good, though for the greater part of the way we had to wade through water nearly to our knees. At one half mile we had a bad place to cross, requiring some digging and bridging, but

June 27th, Monday, — one A. M., found us about a quarter of a mile further, and we halted for dinner. Turned to at 2.15 A. M., and from this time to seven A. M. we had the hardest time we have yet had. We succeeded in advancing only half a mile further south southwest, making one and a quarter miles in eleven hours' steady work. Just after leaving our halting place, we had another opening to cross twenty feet in width; and while we tried bridging it, it opened twenty feet more. After great exertion we succeeded in dragging in three large floes for bridges, and by herculean efforts got our sleds and boats over, launching first and second cutters. Drifting about one eighth of a mile

further, we had another ice opening about sixty feet wide, and to bridge this we had literally to drag an ice-island thirty feet wide and hold it in place. Hardly had we done this when the lead widened, and we had to scour around for more huge blocks to make them serve our purpose. There seems to be general slackness to the ice, and a streaming away without any resistance. It is hardly late enough to find leads of any length, but there are openings enough to give us serious trouble.

To work like horses all day for ten or eleven hours, and to make only a mile, is rather discouraging; and the knowledge that we are very likely going three miles northwest to every mile we make southwest keeps me anxious. Melville and the doctor are the only ones to whom I have communicated our latitude, and to them I intend it shall be confined; for no doubt great discouragement, if not entire loss of zeal, would ensue were such a disagreeable bit of news generally known. I dodge Chipp, Danenhower, and Dunbar, lest they should ask me questions.

Thus far everybody is bright and cheerful, and singing is going on all around. I hope our good health and spirits may long continue. Supper at 7.40; piped down at nine A. M. Found upon arrival in camp that the runner of the second cutter's sled was beginning to double under, so we dismounted the boat and left the relashing to be done by the successive men on watch.

Everybody complaining of the heat — at nine the temperature was 30° in the shade. It seems curious enough to see men seeking a shady spot in which to sit and smoke while the temperature is so low. At supper we found the tent exceedingly warm, and as soon as I

had it cleared I hung up a thermometer with the following result: —

One foot above the ice	37°
Height of my breast	40°

Calm and pleasant weather when we piped down. Called all hands at six P. M. Breakfasted at seven; under way at eight P. M. Some ugly bridging delayed us considerably, so that

June 28th, Tuesday, found us advanced only one half mile southwest. At 1.15 we had everything across the lead, and had dinner ready. At 2.15 A. M. we turned to again, and immediately had to tow a large ice-island into a lead, and placing all our stuff and boats on it made a flying bridge of it. Then we sped on a quarter of a mile farther, and at five A. M. pitched camp. When we started we had a cloudless sky, a blistering sun, light east airs, and a temperature of 28°. But toward dinner time clouds began to rise in the west, and passing around by north and by south at equal speed had entirely covered the sky by four A. M., and rain commenced to fall in large drops. The temperature rose to 30°, and the wind veered to S. E.

The cloud formations were, in the foreground, beautiful cirro-cumulus, which, nearly reaching the eastern horizon, assumed most striking resemblances to ice raised by refraction. Every hummock and peak was very strongly defined, seemingly. Following the cirro-cumulus were stratus, cumulo-stratus, and nimbus clouds, and frequently the rain pattered down from these last named. Though we could have gone on a short distance further before getting to an opening, I decided to camp, in order to save ourselves a wetting. Wet we were, it is true, below our knees, but this

meant only changing foot gear. At five A. M., therefore, camped. At six A. M. had supper, and after supper set No. 2 at work restowing sled, the lee boards having been left out last time.

Strong indications of water to the southwest.

Chipp is improving in health, and I hope in a few days the doctor will be relieved from the necessity of staying with or near him.

At eight A. M. piped down; at six P. M. called all hands; at seven breakfasted, and at eight started ahead. For one eighth of a mile we had fair going with no more road-making than what a few strokes of a pickaxe could do, and then we came to a very ugly piece of ferrying; an opening twenty feet wide filled with ugly lumps and blocks of ice had to be passed, and our only means available were to make a flying bridge. The wind set all these lumps down faster than we could clear them away, and our flying bridge was unwieldy. However, we got across somehow, and moved on, accomplishing half a mile before we halted for dinner at 12.30 A. M.

June 29th, Wednesday. — At 1.30 turned to. Right at our feet we had some road-making to do, and then we came to some very old heavy ice, dirty and discolored with mud, with here and there a mussel shell, and with a piece of rock on it, which, as it was similar to that on Henrietta Island, I carried along. Going ahead with the dog sleds and Mr. Dunbar we suddenly came to water, and peering into the fog it seemed as if we had some extensive lead before us. Going back hurriedly I sent the dingy ahead for an exploration, but, alas! it was fruitless. The favorable lead which we thought we had turned out to be another wretched opening seventy-five feet wide, which we had to bridge.

By great good fortune a large piece was handy, and by hard hauling Dunbar, Sharvell, and I succeeded in getting it in place, and a fortunate closing of the lead a foot or two jammed it in as a solid bridge. Unfortunately openings were occurring in our rear, and we had more bridging to do there.

Never was there such luck. No sooner do we get our advance across a lead than a new one opens behind it, and makes us hurry back lest our rear should be caught. By the time we have got a second sled ahead more openings have occurred, and we are in for a time. These openings are always east and west. By no means, seemingly, can we get one north and south, so that we might make something by them; and these east and west lanes meander away to narrow veins between piled up masses, over which there can no road be built, and between which no boat can be got. It is no uncommon thing for us to have four leads to bridge in half a mile, and when one remembers that Melville and his party have to make always six and sometimes seven trips, the amount of coming and going is fearful to contemplate. Add to this the flying trip of the dog-sleds, and the moving forward of the sick at a favorable moment, and it is not strange that we dread meeting an ice opening.

This very old and hard ice is beyond doubt what Sir George Nares calls "paleocrystic." I measured one place and found it thirty-two feet nine inches thick, and where it is not mud-stained it is rounded up in hummocks resembling alabaster. Over this we sledded and dragged well enough, though it was, as the men said, "a rocky road to Dublin." I encountered one piece, which was sixteen feet thick, and I am almost inclined to think was a single growth, for not a line of union of layers could be seen.

By 7.30 A. M. I arrived with the rear guard at the camp, after sounding in twenty-seven fathoms. I tried to get sights, but the fog was too much for me. To-day we detected the second cutter's runner preparing to double under, and it was at once repaired and re-lashed, getting the boat off the sled for that purpose. The port runner of No. 4 sled was found trying the same trick, and proper repairs were made by the watch while we were sleeping.

Chipp seems to be gaining strength.

The temperature has been steady at 30° all day, but it seems much colder; we always get our feet wet early in the morning, and that keeps us uncomfortable until we stop to camp; a thick fog seems to penetrate to our bones all day. And an unusual thing, a S. W. wind, is worthy of record. My barometer marks now 29.90″, so it may have been right all along.

Supper at 8.30 A. M.; piped down, 9.30 A. M. Called all hands at seven P. M.; breakfasted at eight P. M.; underway at nine P. M.; wind S. W. From nine P. M. to 12.40 A. M.,

June 30th, Thursday, we advanced without much difficulty, only one or two small openings presenting themselves. In these three hours and forty minutes we succeeded in getting everything along half a mile, and then halted for dinner.

Toward midnight we had observed a long low line of black cloud in the west, extending from southwest to northwest, and it promised a rising fog. By the time we had halted it had spread around in its accustomed way north and south, and by 1.30 A. M. the sky was entirely overcast, a wet, damp fog like fine rain shutting in everything. The daily recurrence of this phenomenon makes me believe that we are drawing near

open water, for I hardly believe that such a fog could arise from ice openings daily. Towards midnight the sun's power wanes, and the water begins to give off heat slowly, which is condensed on being carried by the wind over the cold ice, and is deposited or carried along as fog, etc. Generally speaking, when we turn out at six P. M. the sun is brightly shining, and when we go to bed at nine A. M. is shining again. But between midnight and camping time it is foggy enough.

After dinner, 1.50 A. M., we pushed ahead again. By going in advance with Mr. Dunbar I managed to make out a long route of one and a half miles, and terminating in a good flat floe piece. But it required some little bridging and considerable road-making and managing, and a roundabout road of about five miles. However, we accomplished it with no other accident than breaking one St. Michael's sled and springing a cross bar of the first cutter's sled. While ferrying across a lead with Mr. Dunbar this morning, we saw a fish about four inches long dart out from a hole in the ice, and as suddenly dart back again. During our second summer we used frequently to see the same kind of fish, and I wondered if they were young cod or salmon. We never could catch one for a specimen. This morning we also heard some wild geese calling to each other, and a Ross gull was seen. This is the second we have seen since the ship sank. Is this their habitable part of the world? On top of the old ice which we have encountered we have met many pools of water which seem to me to be the same kind as those mentioned by Captain Nares, and from which the Alert's people drank steadily. Seeing some of these pools freeze to-day at 32°, I imagined they might be fresh water, but the doctor tested some with nitrate of

silver and found it contained much salt! Supper at nine; piped down at ten A. M., a long day's work, and I think two miles made good.

The sick being far enough convalescent to do without the doctor's steady presence, I assigned him to-day to the road and bridge-making; his force consisting of Mr. Newcomb and Lee. Alexey will now run with a dog sled helping Aneguin. Called all hands at eight P. M. Breakfasted at nine P. M. Under way at 10.30, repairs keeping us back. By one A. M.,

July 1st, Friday, had advanced everything one half mile over a fair road, and halted for dinner.

At two A. M. turned the hands to and pushed ahead until 7.30 A. M., when we halted and camped, having made good one and a quarter miles southwest in eight and one half hours' work. The road was a mixed one, sometimes very good and sometimes very bad, but as we had a fine, smooth piece in view for our camp, with a fine stretch of three quarters of a mile for our next tramp, we cannot complain at our luck. Some bridging we had to do, and of course much road-making, but we got through without mishap, except the knocking overboard of the doctor by the Walrus, and his getting wet through. During our first stage Sweetman repaired the St. Michael's sled, and consequently we had both of them running regular trips during our second.

Called all hands at six P. M. Breakfast at seven P. M. During the whole of our sleeping time the rain was falling in showers, and when we were called the pattering of the drops could be heard on our tent. Our bags are of course wet again, and in some of them, mine and Ericksen's particularly, the feet end is as wet as a sop.

Ericksen, Boyd, and Kaack turned in with dry foot

gear, and turned out wet to the knees. I managed to get my feet doubled up to a dry place, and slept with tolerable comfort for some hours, until my bones commenced to ache with the infernal hardness of the ice on which we were lying. Snow would be softer, of course, but the heat from our bodies would soon melt it, and we should be lying in a pool of water before long. There is so much snow-water all over the ice that we cannot find a place dry enough to make our rubber blanket a sufficient protection. At eight P. M. a few rain-drops were falling, and the sky promised copious showers. A light N. W. breeze was blowing, and, though there was no fog to speak of, it was difficult to see any distance. Not caring to run the risk of drenching everbody, I delayed marching until nine P. M., when the temperature being 30.5° I concluded we should have no rain, and gave the order to start. A fair road enabled us to move everything one half mile southwest by 12.30 A. M.

July 2d, Saturday. — When we halted for dinner I had gone ahead with Mr. Dunbar to select and make a road, but a thick fog shut in everything a few yards distant. By much groping we found a very rough and circuitous way to some *smooth ice* (*i. e.* ice with two feet of slush and water over it, and holes where you would suddenly sink to your knees), and got back in time to eat dinner. This dinner time is our most uncomfortable part of the twenty-four hours. Our feet and legs are wet in the first half hour of our marching, but as long as we move ahead we do not mind it; but when we halt for dinner our feet become cold, and generally remain so until we camp at night and change our foot gear.

At 1.30 A. M. turned to, and sent one hand from each

tent to help the road and bridge makers. These so quickly cut out a road for us in a roundabout mass of confused ice that by three we had got everything on to the "smooth ice" before referred to. This "smooth ice" led to another piece where the water was knee deep, and we plowed everything through it by five A. M. — a good three quarters of a mile since dinner. Here we were confronted by a terrible mass of hummocks and rubble, but, setting the road makers at it in advance, no delay was occasioned, and we jumped everything through it on to some "old-fashioned ice" (Ericksen) *i. e.* paleocrystic, by 6.45 A. M., and pitched camp. Supper at 7.30 A. M.

Called all hands at six P. M. Breakfasted at seven P. M. A brisk N. N. W. wind; barometer 29.95 at 38°; temperature 29.5°. Rain and snow at various times during our stop. The temperature and our sleeping in wet bags make us somewhat cold and stiff, but that will soon wear off. We have the satisfaction of knowing now that this wind will dry our wet bags and foot gear. At 8.30 P. M. advanced through a very rough and confused "skeleton pack" for one half mile, after which we fell in with some smooth ice, with but little water and snow on it, and this extended for about one mile on our course. It took us until 12.30 A. M., —

July 3d, Sunday, — to get all our sleds and boats up to the beginning of the smooth ice, and then we halted for dinner. The sun now began to try to force its way through the clouds and fog, and it seemed to grow much colder. My thermometer being packed away, I did not verify my sensations.

To avoid the wind as much as possible the boats were slued around across the wind, and we huddled under their lee while we ate our dinner. Having placed flags

ahead farther than we had been able to go before dinner, I instructed Melville to move everything on to the last flag, while I went ahead to plant more. By 3.30 A. M. I had marked out a point which I considered a good two miles southwest of our last camp; and concluding this would be as far as we should be able to drag our loads, I sent word back by Dunbar to Melville, and ordered my instrument box sent to the front. The sun was now showing at times, and the clouds and fog were rolling away before the N. N. W. wind. The barometer was at 30, and the thermometer at 27°, the latter accounting for the clearing weather; ahead of us a smooth road extended for a mile, apparently giving good promise for to-morrow. The fog in rolling away disclosed a few cirrus clouds, promising good weather, and the low temperature seemed to insure our having the sun long enough to get our wet clothing and sleeping gear dry. At 6.45 A. M. everything was up and we pitched the camp. At 7.30 had supper. At nine A. M. read Articles of War, and had divine service. At 9.30 A. M. piped down. Everybody is bright and cheerful, and apparently (except Chipp and Danenhower) in excellent health. We have abundance of food, good appetites, sleep well, and, as Mr. Cole expresses it, he "seems to get more spring in him every day." My sights place us in 77° 31′ N., and 150° 41′ E., a change in position since June 25th of thirteen miles S. 30° W. As our distance made by account is twelve miles, it would seem that we have had no current against us. But of course I cannot tell; we may have been set down that much in three days by our northerly winds, and therefore I must accept the position as simply showing where we are, and push on for the edge of the ice.

Called all hands at seven P. M. Breakfasted at eight P. M., under way at nine P. M. Chipp seems so much better that the doctor has concluded to stop his whiskey for a day or two, to see if he can gain strength, or keep what he has, without it. By ten P. M. the wind was very light from the southeast, temperature 25½°, and a long, angry series of cirrus clouds and mare's tails extended from northwest to southeast. Beautiful summer temperature ! ! Having remained behind to work out my sights, I now, at ten P. M., hastened forward, and was able to fix upon a good place one and a fourth miles southwest for our dinner, and accordingly had things brought to that point.

July 4th, Monday. — At 1.45 A. M. halted for dinner. At three sharp set out again, and though some little confusion was imminent because the Walrus took the wrong road, we avoided all serious delay, and by 6.20 A. M. had advanced everything one mile more, making the, to us, unprecedented distance of two and one fourth miles southwest in eight hours and twenty minutes. For the last one fourth mile our course lay over some beautiful hard ice parallel to a narrow lead, and we were able to send two sleds ahead at a time, and the second cutter and whaleboat together, making the first cutter our only "all hands" haul. This reduced the number of trips from seven to four, a great saving, — though possible only for short stages, because such work soon exhausts the men's breath. Having been sixteen days under way, we have sensibly reduced the amount of our provisions hauled on the dog sleds, and in consequence the dog sleds get home some little time in advance of the boats and heavy sleds. I have therefore ordered the bags to be removed from the Walrus, and the top tier of bags from the "bread sled," assigning

them to the quick-running dog sleds, and in this manner I hope to lighten the heavier sleds so as to enable the men to haul two sleds at a time. While the after-dinner work was going on, Mr. Dunbar and I went ahead to look for a road for to-morrow. At the camping place we seem to have come to the end of the heavy, smooth floe over which the last half of yesterday's and both portions of to-day's work was done.

The narrow lead which I mentioned as running parallel with it for the last one fourth mile separates it from some disconnected pieces of ice of last winter's formation, extending for about a mile, and then we seem to come to some old ice again. The prospect is not bad; I find we are not consuming our daily ration — one pound of pemmican — nor have we ever done so; and, strange to say, the dogs do not sometimes eat theirs. We all like it amazingly, eating it cold three times a day, like cake out of our hands, but yet we seem to have enough on less than a pound.

Our greatest comfort morning and evening is Liebig's Extract, or beef-tea. Our daily allowance of one ounce per man is sufficient to give us a pint morning and evening, and I know of no more refreshing and comforting thing up here than this same warm drink. Some tents take the whole ounce at dinner, but we in No. 1 prefer it when we get up, and when our day's work is done.

I find, also, that one pint of alcohol is necessary for each tent each meal to cook coffee, beef-tea, or chocolate, as the case may be, and to melt enough snow and broken-down ice-crystals for drinking water. This, I am sure, is in excess of former sledge travelers, but as yet I can see no way of reducing it. Supper at 7.15 A. M. Our flags are all flying in honor of the day,

though to me it is a very blue one. Three years ago to-day in Havre the Jeannette was christened, and many pleasant things were said, and anticipations formed, all of which have gone down with the ship. I did not think then that three years afterward would see us all out on the ice with nothing accomplished, and a story of a lost ship to carry back to our well-wishers at home. My duty to those who came with me is to see them safely back, and to devote all my mind and strength to that end. My duty to those depending on me for support hereafter impels me to desire that I should return also; but those two duties apart, I fancy it would have made but little difference if I had gone down with my ship. But as there is nothing done without some good purpose being served, I must endeavor to look my misfortune in the face, and to learn what its application may be. It will be hard, however, to be known hereafter as a man who undertook a Polar expedition and sunk his ship at the 77th parallel. Piped down at nine A. M. Called all hands at six P. M. Breakfasted at seven P. M. Under way at eight P. M. Three hundred yards from our camp we came to an ice opening one hundred and fifty feet wide, right in our way; as we are now doubling our fleets, that is, dragging two sleds at a time, such an opening was a serious inconvenience. A small, thick floe piece was floating in the middle of the lead, and I hoped to get that pressed into service before any delay could occur. Sending for the dingy I succeeded in getting this lump in tow, and ready for a flying bridge, or ferry, while the other boats were coming up. Second cutter and two sleds were then carried across, the remainder being kept behind for a second load, and to avoid an accident involving loss of our provisions. However, everything got

across all right. Soon after we had to make a second ferriage, and then a number of bridges before we reached the hard ice which Dunbar and I had visited before our last camp. Ice which was connected then was all open and moving now, and it was not until one A. M.,

July 5th, Tuesday, that we had everything in sufficient security to sit down to our dinner. The snow was falling quite heavily in large flakes, and we rigged up our rubber blankets from the boat's rails to protect us, making our dinner-halt look like a small country fair, as some of the men said. I could not help remarking that there were many people under canvas in Hoboken to-day picnicking, who would like a little of the coolness we were now having, but it seemed to provoke a desire to exchange places with them, and I said nothing more.

At two A. M. we turned to and went ahead. Ice openings again annoyed us somewhat, but we set to work bridging them. While so doing the whole pack seemed to get alive, and the tossing and tumbling that went on for fifteen minutes were uncomfortable to witness. Large floes, which had been held under others, became liberated, and rising to the surface floundered around like huge whales; where the floe edges came together large blocks were broken off, and reared up on end twenty-five and thirty feet high; a mass of rubble coming together raised an enormous piece, until it stood like a monument thirty feet above the surface of the floe. Long, thick snouts shoved up above and over even floe pieces, like immense snow-plows, and groans and shrieks came from all directions as these snouts rose and advanced inch by inch; where long floe pieces reared up to thirty feet and toppled backward, they broke in large lumps and scattered themselves for

yards. And yet we seem to have got out of a paleocrystic sea. Our road yesterday and to-day has been over ice that more nearly resembles the pack we entered near Herald Island than anything else, and with occasional exceptions seems to be one season's growth, the thickness varying between seven and ten feet. If this be correct assumption, we may be out of the drifting pack and in the ice clinging to the Liakhoff Islands, in which case I hope many days will not elapse before we get in a lead to some purpose.

Chipp is not nearly as strong as he would have us believe. I mentioned yesterday that the doctor stopped his whiskey to see the effect. Last night (our sleeping time) Chipp ate nothing, had no sleep, and was groaning and tumbling around all the time. This we learn from Dunbar, for Chipp asserts he is "first rate," and tells Dunbar to say so when he is asked by the doctor. Foolishly enough he wants to be discharged to duty, thinking he is able to do work.

Going ahead I marked a camping place, which we reached at six A. M., having made good two miles in a southwest line. Called all hands at six P. M.; breakfasted at seven P. M.; under way at eight. About five hundred yards from camp we came to a lead which we easily crossed, and then had some fine sledging for one quarter of a mile along its eastern side on our course. We spun along merrily enough this stretch, and were then confronted by a ridge of large floe pieces through which we had to dig a road. This was done while the boats were being brought up, and the sleds were got through; but before the boats could be got along the ice commenced to open, and we had great difficulty in getting boats and dog sleds through. Meanwhile I had pushed on and laid out a road, and

directed Mr. Dunbar to proceed ahead of the dog sled to mark it for the heavy sleds, while I remained at the opening ice-ridge. Toward midnight the sun made several ineffectual attempts to break through, and a line of soft fog rested low down between south and west. I was somewhat in hopes that the sky would clear and the fog roll away and show us land, but no such good luck attended us. Sometimes it snowed, at others a mist, cold and searching, surrounded us.

July 6th, Wednesday, one A. M., found us halted for dinner, about a mile from our starting point, at the edge of a broken mass of floe pieces and water. The wind had got to S. S. W. and began to freshen, and the mist was colder and wetter than ever. At two A. M. we turned to and immediately hooked on to a large ice-cake for a ferry boat, and placing two provision sleds and the dog sleds on it, we hauled it along two hundred yards to the other side of the lead, launching and paddling the boats after it. This took some time longer than necessary, on account of the line parting and the dingy getting adrift, but we finally had our things ferried by four A. M. Pushing on across a second lead we dug a road over a ridge of piled up hummocks, and had nearly completed our second mile for the day when we were checked by an ice opening thirty yards in width. As I generally wait to see the rear safely up before pushing ahead, nothing was done until I reached the front again. A large piece conveniently at hand was seized upon as a bridge, and things rushed across to a camp at six; but it was not until 7.30 A. M. that I came up with the rear guard, and sat down to my supper — cold, wet, and hungry. Ericksen (who had no sleep last night on account of toothache, and who suffered very much to-day) brought up the dingy as a finish to our day of ten and a half hours' work.

The after bearer of the first cutter's sled was found sprung, and the runner lashings slack. Ordered the watch to repair during our sleep. Several Ross gulls and three seals seen to-day. Piped down at nine A. M. Called all hands at six P. M.; breakfast at seven P. M. A gloomy, disagreeable day, and unless we want soaking wet jackets we must stay under our tents. As soon as breakfast was over I sent word around that no start would be made until the weather improved. We are evidently having a S. W. gale, an unusual thing in our experience of two years, and it would be a matter of pleasant interest, were it not also a subject of much anxiety, to remain quiet and see where it would drift us. This wet day and consequent halt come in opportunely, for the men are enabled to repair their worn and leaking moccasins. Our sleeping-bags, alas! are again wet, and in fact it is a miracle when they are dry. If we keep wet this way all the hair will come out of the bags, and we shall lie down on the bare skin. Up to midnight the wind tore around us in fierce gusts, threatening to blow our tents away, while the rain beat down almost steadily. Though cold and damp, if not to say wet, we were in tolerable comfort, because sheltered. The dogs crouched under the boats, or whatever else afforded a shelter, while we, human beings, stayed within doors. The wind continued at S. W. true (all directions in this journal are true); the barometer fell to 29.30 at 36°, and the temperature rose to 33°. If this blow does not sweep us to the northward again, which I very much fear it will do, it will do us good in two ways: break up the ice and improve our traveling.

July 7th, Thursday. — Had dinner at midnight. The wind freshened a little, the temperature fell to 30.5°, and

the barometer fell to 29.28 at 36°, and there remained. The rain ceased, and I am now looking for a change of wind to northwest. Everything had such a stormy and unsettled look, however, that I decided to remain in camp until our usual starting time, or a little earlier, perhaps. Aneguin shot a seal, but it sunk before the dingy could be run down to the water. Twenty-three fathoms water, and rapid drift to leeward N. E. Supper at six A. M. Mounted the first cutter again on her sled. Nindemann felt ill to-day, and in order to let him get quiet and warm, the rest of us in No. 1 tent turned in at seven A. M. Wind canting a little to the westward, but the barometer sticks at 29.28, and the temperature stood at 32°. A heavy fall of snow in large blotches like a bunch of feathers. Piped down at nine. Called all hands at six P. M. During our sleep the wind had got to N. W., and was blowing in fresh squalls. The sun occasionally appeared. The barometer had risen to 29.42 at 35°, and the temperature was 30.5°. Got under way at eight P. M., and by seven A. M.,

July 8th, Friday, had completed one mile after the most disheartening and discouraging day we have yet had. The fresh N. W. wind had opened the ice in all directions, except the one we wanted, and a constant succession of ferriages and bridges fell to our lot. The wind seemed very searching, and finally our customary fog and misty rain set in, making us wet as well as cold. We did not have dinner until two A. M., it taking us six hours to make our first half mile. At three we turned to again, and by seven went into camp. Supper at 7.30 A. M., piped down at nine A. M. Called all hands at six P. M.; at 7.45 snow-squall; at eight P. M. got under way, and, thanks to a good road, were able to push on in such good style that at 12.05 A. M.,

DRAGGING THE BOATS OVER THE ICE.

July 9th, Saturday, we had advanced everything one and one quarter miles, and had come to a halt for dinner. Our traveling to-day must make up for our mishaps and delays of yesterday. We can do well enough when the ice holds together. It is only these ugly openings which make us lose ground.

Now that we have two of the sleds lightened and the dogs' work increased, I find that the men have to go over the same ground four times each way, minus one, and the dog teams five, minus one. This means that at the first trip they bring up two sleds; second trip, two sleds; third trip, first cutter; fourth trip, second cutter and whaleboat, and, generally speaking, they and the dog sleds finish the day's work at the same time. One mile made, therefore, means seven miles traveled by men, and nine by dog sleds. What with coming and going, — getting ahead to select road and going back to see the rear close up, — I am three times over our road night and morning, and I know from my own sensations how welcome the camping hour must be to Melville and the men. Alexey stills hangs to his work, though under the weather from indigestion. I learn from the doctor that one cause of Alexey's downheartedness lately was because his father and uncle died from the same disorder, and he feared he was surely about to follow them; and another cause was his anxiety lest he should not be paid because he was sick, and thus Aneguin would get more money than he. He seems to have a wonderful confidence in our ability to provide him with everything, for he very seriously told the doctor yesterday that he would like some mutton! When pemmican has to be fish, flesh, and fowl to us, his request was somewhat amusing. The northwest wind continued fresh while we were at dinner, and though we cowered

under the lee of the boats we were cold and miserable. Our usual fog made things still more uncomfortable, and I think no one was sorry when at 1.10 A. M. I gave the order to turn to and go ahead.

A short distance from our dinner camp we saw a seal igloo, where, no doubt, a seal had had her young. The communicating hole to the water remained, but the snow part or covering had melted away. Farther on we saw some bear droppings several days old. We have struck some old ice again, and our going promises to be good. There are no signs of any openings, and I hope to have accomplished three miles altogether by the time we camp. This would be our best day's work in that case.

Though this is old ice I do not mean to say it is paleocrystic. It is of more than one year's growth. Numerous snouts, smooth, hard, and in places muddy, stick up above the level to a height of twelve and fifteen feet, and I notice they all point to southeast, as if the jam came from northwest. My German chart says the prevailing winds at the New Siberian Islands are from southwest and northwest in winter, and it does seem as if we were having similar here. Toward three A. M. the wind backed to W. N. W. Sometimes snow, sometimes fine hail. Though we had a good road, comparatively speaking, everybody was tiring with the numerous "fleets," and it was not until 7.30 A. M. that the last boat was hauled into camp, — over three miles accomplished since eight P. M. yesterday.

I am not sure that I make anything by this, for everybody is fatigued, and, perhaps, will not be very fresh for hauling this evening. We have one and one half miles same kind of road flagged out ahead of us. Supper at 8.30 A. M. Piped down at 9.30 A. M. Called

all hands at six P. M. Breakfasted at seven P. M. The wind went down during our sleep, and we found, on awakening, a light west air, temperature 32.5°, barometer 29.90 at 42°, and, wonderful to relate, some sunshine, with a promise of more by and by if our accustomed fog does not intervene. The ends and undersides of our sleeping-bags are now like pulp from wet, and though enough hair remains dry inside to swear by, there is not much comfort in them. Got under way at eight P. M. One and one half miles by 12.15 A. M.,

July 10th, Sunday, at which time we halted for dinner. We had had considerable sunshine thus far, but now the fog began to shut down on us. Unfortunately the lower meridian altitude is too low for me to get it in an artificial horizon, and there has been too much wind ruffling the ponds for me to use them instead of mercury. So whenever the sun *has* shone at midnight, which has not exceeded three times since our start, I have only once got his altitude. To-day we encountered considerable "needle ice," so called by Parry, and by him attributed to the action of rain drops. In our opinion this is caused by the more rapid drawing away of the salt in some places than in others, leaving bunches or tufts of long spikes. A piece of honey-comb cut down through shows the same general formation. In one or two places there were large mats of it, trying alike to dogs' feet and moccasins. Light airs and calms, with occasional snow-squalls. At 1.15 A. M. turned to, and went ahead and had a fine road. By five A. M. we had reached the end of the smooth floe commenced on yesterday, and had come to a lead separating almost entirely this floe from another, and somewhat rougher, but still not difficult. Over a small neck of connecting ice I pushed everything, lest

an opening should occur during our sleep, and at 6.40 A. M. pitched camp. In the lead several seals were seen, but as soon as rifles were obtained they were remarkable by their absence. Got a fair Sumner this morning, from which I determine our position to be latitude 77° 8′ 30″ N., longitude 151.38° E., a change of position since the 3d of twenty-six and three quarters miles S. 30° E. By account we have made about sixteen miles southwest, so this shows how little can be done with any certainty. Keeping on in our course is all that can be accomplished, and, in my opinion, if our longitude be right, a southwest course soonest brings us to the edge of the ice.

Supper at 7.30. Divine service at 8.45. Piped down at nine. After supper quite a little excitement was created by the cry of land. To the southwest there was something which certainly looked like land, but the fog assumes so many deceiving forms that one cannot be sure of anything. The nearest Siberian island is one hundred and twenty miles from us, and, unless we are going to discover new islands, I cannot believe that we have seen land to-day. I think we made good three and a quarter miles to-day in nine and one half hours' work.

At piping down, light northwest airs. Barometer 30.05 at 40°. Temperature 32°. Called all hands at six P. M. Breakfast at seven P. M. Under way at 8.15 P. M. Some little delay was occasioned by my sending around a bag and the following order: —

July 11*th*, 1881.

Officers in charge of tents will please have collected and placed in this bag *all* loose ammunition. This bag will be carried in the first cutter, and will be in my charge. In an emergency, while marching, or encountering any game while under way, any officer at hand may serve out ammunition at his dis-

cretion ; but when encamped, such serving out is to be done by me. Respectfully, G. W. De Long,
Lieutenant Commanding.

Being somewhat backward in my writing, and having a road marked out for half a mile ahead, I sent Mr. Dunbar ahead, next the doctor with his road makers, and then Melville and his haulers, while I remained behind to write up my journal.

At nine I started forward and met Aneguin coming back in haste for a rifle, saying that Mr. Dunbar had seen a bear. Getting to the front, I met Mr. Dunbar, who, sure enough, had encountered Bruin, and like a prudent man, having nothing more dangerous than a boarding-pike, took to his heels. While turning a sharp corner, he met the bear at thirty yards distance, and, upon retreating, was followed in chase for a short spell. The bear then sat down and looked at him, and, while Mr. Dunbar was waiting for a rifle, waited conveniently in the neighborhood, leaving only as Aneguin with the weapon came in sight. Chase was given, but with the usual result — *nil.* By one A. M.,

July 11th, Monday, everything was advanced one and a half miles, and I was counting upon completing another three miles this day, when a lead was found open a quarter of a mile from our dinner camp. Every time I stopped before midnight I could hear the soft roar of water lapping against ice, and I was not much surprised when water was found close at hand. Turned to at 1.50 A. M., and advanced everything to the lead by 3.50. The opening had widened considerably, and several of them followed in close succession, requiring ferrying and bridging, and at 6.40 A. M., when we pitched camp, I am sorry to say we had advanced only two miles altogether instead of three.

While waiting for everything to come up to the first ferry, I was much struck with the unusual appearance of the clouds to the southwest, which gave more indications of water than anything we had yet seen. Calling Mr. Dunbar's attention to them, he expressed his opinion that such clouds did not hang over ice. Climbing to the top of a hummock twenty feet above the water-level, and examining carefully with a glass, I saw unmistakable *land* and *water*. It now appears that this was the land seen yesterday. At all events it is land, sure enough, and water, too. What it may be no one can say — whether newly discovered land, or (our longitude being out) some portion of Siberia. It can hardly be any one of the Liakhoff Islands.

Another pleasant feature is our course, southwest being a straight line to it. My change from south to southwest may therefore be a wise act, resulting in our speedier liberation. Judging by ordinary distances, I should say the land is ten to fifteen miles distant; and as I could see quite a large expanse of water, with long streams of detached ice, it may be that once at the margin of this ice-field through which we are now toiling we may have open water to the Siberian coast, thus verifying some part of the statement of Russian explorers. We have exploded so many theories of other people that it will be hard to make us believe that we can have left the ice behind us short of the Arctic circle.

One month ago to-day our ship went down, and I do not see any one the worse for the work that has fallen to us since. That it is hard work there can be no dispute. It is conceded by everybody to be the hardest work they ever did. The drag, drag, the slips and jerks, the sudden bringing up of the hauling belt across

the chest, are fearfully trying; and the working with pickaxes through flinty ice makes every bone ache. From the looks of the weather at camping, I judge we are in for a southeast blow. The sky is overcast, a nasty fog shuts in everything. If we have a southeaster we may be blown miles to the northwest before we can get to this land or water.

Our cocoa and chocolate being exhausted (to my satisfaction, for I like neither), we commenced this evening (morning) on our tea, — one ounce per man is too much, and I shall reduce it to a half ounce. Pipe down at nine A. M. Men to stand watches of two hours. Called all hands at six P. M.; breakfast at seven for everybody but No. 1, and we were delayed until 7.20; occasionally the cooks get bothered with the stoves, and this was the case with our cook, Ericksen, this morning. Found the barometer had fallen to 29.55 at 38°, and the temperature risen to 35°. A thick fog shut in everything at short distances, but we had so much water around us that we seemed already to have reached the margin of the ice. Rain fell at six P. M. heavily, and the S. E. wind, which blew freshly during our sleep, was now only a moderate breeze from south southwest. At eight P. M. I took the dingy and went ahead to look at our prospects. So much fog prevailed that from the camp it was impossible to see the other side of the water around us. Just after I started rain fell again, but the wind shifted to southwest, and a clearing along the horizon indicated a change for the better. I found that in order to make any progress we must ferry our things down a lead about three hundred yards in length, and then drag them across an intervening floe piece to another lead which we must cross. Emptying the first and second cutters at nine P. M., they were made to

serve as ferry boats. Hauling loose packages, tents, sleeping-bags, knapsacks, and even dogs and dog sleds was easy enough, but the loaded sleds gave much annoyance, lest improper managing should damage a boat. Using the first cutter alone for this purpose, and hauling one sled at a time over the stern, two trips were made, and then I took her and gave her the two remaining sleds to carry, one over the bow and one over the stern, while six of us got amidships to distribute weight while we hauled her over. It was risky, I admit, but I did not want to lose the time which would be required to unload, load, and relash the four heavy sleds. I do not think, as it was, we made more than one quarter of a mile good when the arrival of —

July 12th, Tuesday, gave the signal of halting for dinner, which we ate at one A. M. The weather was sensibly colder, and the wind had veered to the west. The sun began to show brightly, and we could see for some distance. The ice ahead of us had all opened with the change of wind, and ferrying was the order of the day. Though not disagreeable work it is at times fearfully slow, particularly when no suitably sized pieces are at hand, and we have to take an island as long as a mail steamer, and seven to ten feet thick, for a ferry boat. However, over we went, traversed two floes one quarter of a mile each in extent, and, finally, at 6.30 A. M., halted and camped on an island of ice five hundred yards in diameter, and averaging ten feet in thickness, as the best camping place available. Our outlook was not encouraging. Lanes of water not large enough to help us, but wide enough to bother us, and some rough-looking ice lay before us for our next task. The wind had got to northwest and the weather was bright and sunny, but somewhat squally. Distance made

good one and a half miles. Nothing could be seen of the land and water we saw yesterday. The southwest horizon was foggy. Many dovekies (guillemots) were seen, several gulls, one auk, and, strange to say, the doctor picked up a *live butterfly*, which I have preserved. This last is not an *habitué* of the ice, and was certainly blown from the land by the southeaster of yesterday, or by the southwester which followed it.

Supper at 7.30 A. M. Nobody under our conditions could write very fully all the occurrences of a day, and I am very glad before turning in each morning to remember even as much as I write. The hundred trials and difficulties in getting along, the heavy hauling, etc., are regular, and once mentioned need no repetition. No doubt, one of these days I can more satisfactorily describe our march over the frozen ocean, but just now these rough notes must suffice. Sounded in twenty-three fathoms; muddy bottom, rapid drift S. E. Piped down at nine A. M. Called all hands at six P. M.; breakfasted at seven P. M.; fresh N. W. wind; barometer, 30.05 at 40°; thermometer, 31°; cloudy and foggy; under way at eight P. M. Immediately we had to ferry all our things across from the island on which we camped to the one alongside of it, and from there to adjoining ones, and at 12.30 A. M.,

July 13th, Wednesday, we had only made one half mile good, reaching then a strip of ice about a mile long. Halted for dinner, and at 1.50 went ahead again. Traversed this one mile piece, and then came to an opening about two hundred feet wide, separating us from an ice-island, which on the opposite side was near enough to a floe piece to make access easy. By great good luck there were three large cakes floating along this two hundred foot opening; we seized on

them, dragged them into position for a bridge, and were thus able to proceed without much delay. Beyond them was a long, flat floe one half mile in extent northeast and southwest, and probably five miles northwest and southeast. As we only took so much of it as was on our course, the one half mile was all that we traversed, and at 6.35 A. M. halted and camped, satisfied that our one and three fourths miles were well made. While the boats were being brought up, Mr. Dunbar and I took the dingy and went down the lead at which our floe terminated, to see what it promised. It resulted in nothing except giving me a high hummock from which I could see well around me. I at once made up my mind that to go on our course tomorrow would be impossible. For not only did we have a fearful half mile of repeated ferryings before we reached good ice again, but the unloading of the boats, and a whole day, would be thus involved. By going across the lead due west we had a level floe running west southwest for two miles, which then connected with good ice, and would enable us to resume our course southwest. This I decided to be my plan of action on again breaking camp. Returning to our camping place I again saw the curious-looking clouds noticed in the southwest on the 11th, and looked anxiously for the same land and water then seen, but was disappointed. Shortly after Mr. Dunbar came to me and said he saw the open water. After some looking in vain, I at last saw it, with ice-streams in it, but no land, and judging from relative distances and my range of view, I think it was inside of eight miles southwest. The weather since midnight had been dull and gloomy. Large ponds, larger than any we had yet seen, were crossed, and more lay beyond us. These, and the remarkable

looseness of the ice, led us to infer that we were near open water. As a good clear horizon would decide this question beyond doubt at any time, our foggy weather is all the more deplorable before camping.

And now occurred the first serious breach of discipline among the crew since our commissioning, over two years ago, and on the part of a man whose conduct has been so uniformly beyond reproach as to make it the more surprising. It appears that Melville had placed a pair of soles in the stern of one of the boats, and the shaking of the boat in dragging had shifted them on the sleeping-bag of Ed. Starr (seaman). Upon halting to camp, Starr went to the boat, picked up the soles, and flung them some distance on the ice, in a temper. Melville informed him they belonged to him, and ordered Starr to pick them up, at the same time saying, "Don't do that again." To the order Starr paid no attention, but growled something about wet soles and his sleeping-bag, and he did not care whose they were. Hearing Melville repeating his order, and Starr making argumentative and sulky replies, I went to the scene, and to my surprise found Starr showing no intention to pick up the soles, but continuing to speak in a surly and disrespectful manner. I at once ordered him to stop talking, and to obey Mr. Melville's order. He paid no attention to either order, but continued his rummaging in the boat; and his growl continued, "A nice place to put wet boot soles," etc., etc. And it was only upon my three or four times repeated order to pick up those soles that he did so. But to my order to keep silent he paid no obedience till he apparently had no more to say. I ordered him to stand apart from everybody, and in a few moments asked him if he had anything to say in explanation of his conduct, — disobedience of Mr.

Melville's orders, and disobedience of the orders of his commanding officer. He had nothing to say beyond mildly offering a statement that he did not know Mr. Melville was speaking to him, which, to say the very least, is preposterous. I at once put him off duty.

Piped down at nine A. M. Called all hands at six P. M. Breakfasted at seven P. M. A clear, bright evening and calm. Upon looking to the southwest a land-like appearance was to be seen, and several declared they could also see the water. The sun at this hour strikes at right angles, nearly, to anything southwest, and consequently prevents clear views. But if we can hold this bright weather until four A. M. to-morrow, the sunlight will then be at our backs, and upon the supposed land and water, and we can have a good positive view.

Under way at eight P. M. Crossed the lead near the camp, and swung along on a west southwest course, as mentioned in my remarks at camping. During our sleep, however, several small openings had occurred in the large ice floe, and we found ourselves obliged to bridge. It was not until 12.30 A. M.,

July 14*th, Thursday*, that we had reached the good ice, and were enabled to lay out a track on our south southwest course. We now halted for dinner. At two hours before midnight a breeze had sprung up from northwest and brought up masses of fog, which soon spread over the whole sky, and during our dinner we were dampened and chilled by the change from the bright sunlight.

I have hitherto forgotten to mention that within a few days some of our dogs have been attacked with fits. First, the dog Jim; his fit took him while in harness, and lasted for some time after he was cut adrift.

Not much foaming at the mouth, but long continued shaking, as if suffering from cold. Next, Foxy had a bad fit. Then Tom had a queer sort of attack; he acted as if dizzy, and spun around for a minute or two before attacking his partner in the harness, Wolf, which he did as if thinking Wolf answerable for it. With Tom it has seemed to stop, for two days have elapsed without any new cases. Foxy now heads the team which the doctor has to draw the dingy, which team consists of seven of our poorest dogs. Ericksen has seven of our best. Alexey seven good ones. Poor Jack (Joe), with the lame back, has been accidentally left behind at some lead or other, and the remainder are so mean that they are not worth hitching up. Turned to at 1.50 A. M. and went ahead, and though the road was somewhat ugly, requiring much road-making and some bridging, at 6.20 A. M. we had accomplished two and a half good miles, and went into camp.

The weather remained anything but satisfactory. Sometimes the sun broke through the fog and gave promise of pleasant weather, but fresh volumes of fog rolled up from the northwest and shut in everything. When we camped we had a succession of snow-squalls.

I noticed during the day that the small ponds on the ice were freezing over, and upon camping I was struck with the fact that upon the thin ice was plainly visible the "efflorescence," or expressed salt. If the fact that this pond water remained liquid *below* the temperature of fresh water freezing were not sufficient proof that it contained salt, the oozing out of the efflorescence after it does freeze is surely proof positive. Our men's boot-soles are wearing out so rapidly on the sharp ice over which we are traveling that their demands for

repairs exceed our supply. I have already authorized the use of the leather from the dingy's oars, and this morning I had to have the leather cut off the first cutter's steering oar for patches. This leather will last longer than skin patches, it is true, but I hope the time is not far distant when I can have at least this one care and anxiety removed from my mind. Supper at 7.20 A. M. Piped down at nine A. M. Called all hands at six P. M. Breakfast at seven P. M. Moderate N. W. wind; weather dull and gloomy, with some fog. Under way at 8.15 P. M., some little time having been lost in harnessing up the dogs. Some of them, during our sleep, devoted themselves to eating the hide part of two harnesses carelessly placed within their reach. There were no less than eleven openings in the ice ahead of us before dinner, and we had to bridge and watch three of them. In momentary fear that all eleven might open and give us any amount of trouble, I hurried everything along with all speed, and I am satisfied that by one A. M. we had made a good mile and a half.

July 15th, Friday.— Before midnight the horizon to the northwest began to brighten, and there were indications of a clearing. The heavy masses of fog and clouds began to roll away, and occasional glimpses could be had of the sun and blue sky, with cirro-cumulus clouds which seemed to me to be rising from the southeast. By midnight the sky was clearing also to the west and southwest, and I was beginning to peer around for our land and water, when I saw Aneguin ahead of me on a high hummock looking intently to the westward. Hastening forward, he showed me a long black streak on the western horizon, calling it an island. I looked, but saw what I called water, and so it proved upon getting my glasses. I saw the long, regular curve mentioned on

the 13th, and, perhaps, the same seen on the 11th. I certainly think it is the open ocean. As from our elevation our horizon could not exceed six miles, I feel satisfied that the edge of the ice must be within that distance, and as the point of the land came down in the middle of the water it is equally evident that we shall come to the water before reaching the land. As the land now bears S. 60° W. magnetic (about W. by S. true) we have been drifting a long distance to the southeast, or else we are very close to it, for a change of bearing of five points has occurred in fifty-two hours. We have not had wind enough during that time to make any very extensive drift, and our course has been steadily southwest. All things taken into consideration, therefore, I assume that we are near land and water, and I decide upon resuming our march after dinner, to head W. by S. directly for both. During dinner (1.40 to 2.20) we saw the moon for the first time, I think, in two months, and what was more satisfactory we saw a seal in a lead near us, and Mr. Collins shot him, while the dingy this time got him before he sunk. Upon resuming the march at 2.20, therefore, we headed W. by S. (true), and I directed Mr. Dunbar to take Aneguin with him and go ahead a prudent distance to see whether we were really approaching the open sea, without paying attention to the movements of the sleds. I was certain that Mr. Dunbar and Aneguin could go three miles while we were advancing half a mile, and from this three miles a better view could be obtained, and a more correct opinion formed as to its remoteness. If the water were only six miles off, going three miles toward it would permit a very accurate estimate of the remaining distance. Mr. Dunbar carried a rifle and ammunition and some pemmican.

By 5.50 A. M. we had advanced everything three quarters of a mile, and then had come to a smooth place for camping, the only suitable place except one at a much greater distance than I thought we could make in reasonable time. Camped therefore and very fortunately, for no sooner were the tents pitched than it commenced to rain steadily. The wind had backed to west northwest, the sky had become covered with clouds, generally in north and south lines.

The seal comes in splendidly for two things, — food, and grease for our leaking boots. Before camping I had Iversen break off from boat-hauling, and set to work on the preparation of pussy. Removing the backbone and blubber the meat was cut up into small pieces for convenience in stewing, and the amount, twenty lbs., proportionally divided among the five tents. A similar division was made of the blubber, so that I am sure each man got his share for his food and for greasing his boots. Extra alcohol for cooking (2 oz. of salt), and a potful of broken bread to each tent, — seemed to promise a good supper. At 7.15 A. M. we sat down in No. 1 tent to a simply delicious repast. After our long diet of pemmican the change alone was a luxury. We did not stand upon our ship ideas of hanging the seal up until the animal heat had departed, or keeping it for a few days. The seal was shot at 2.30, skinned at four, and eaten at seven, and we feel as if we had dined at Delmonico's. Our seven thirty-thirds of twenty lbs. were cut up in small lumps, boiled in water, three and one half ounces Liebig added, one pint bread crumbs added to that, and salt to the extent of one ounce, and for a feast I shall long remember it. No. 4 tried to fry their six thirty-thirds, and so very successfully that Melville says the taste was like fried oysters!

At 7.30 Mr. Dunbar and Aneguin returned, and I was informed of the result of their journey. They went about three and one half miles, and Mr. Dunbar says he thinks they were half way to the open water. He was raising it very fast, but the land remained as distant as ever, — that is, he could see nothing but the faint snow curve which we have seen all along. Evidently, then, the land is distant, and may be, after all, one of the Liakhoff Islands. But I thank God that our chances seem so good for a speedy getting afloat, and thus rendering comparatively easy our access to it. Piped down at nine A. M. Called all hands at six P. M.

Weather, curiously enough, bright and pleasant, though from the temperature (34° in the sun) one would expect our customary fog.

Under way at eight P. M. Had "a rocky road" ahead of us with some digging, and, though we crossed several leads, but one bridging had to be done.

The Loon.

CHAPTER XIV.

BENNETT ISLAND.

16 *July* — 5 *August*, 1881.

Nearer View of the Island. — A Narrow Escape from Drowning. — Open Water in Various Directions. — Crimson Snow. — Perplexing Views of the Island. — Land or Water? — Making for the Land. — Impassable Roads. — Needle Ice. — Walrus. — Rotten Ice. — Confusion of the Moving Ice. — Clear Weather and New Views. — Recourse to Boats. — Fearful Work. — The Constant Change of the Ice. — Drifting Away from the Island. — How Relief is called. — Sudden Discovery of a Cliff. — A Rush for the Island. — A Terrible Landing. — Taking Possession of Bennett Island. — Plan of Operation. — Assignment of Work. — Geological Foundation of the Island. — Tidal Observations. — Reconnoissance by Mr. Dunbar. — Coal on the Island. — Mr. Chipp sent on an Expedition. — Return of Mr. Dunbar. — His Report. — Disagreeable Weather. — Return of Mr. Chipp. — Record made for Deposit. — The Cold Storm. — Shooting of Dogs.

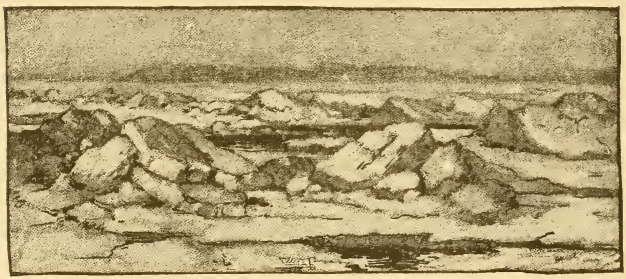
JULY 16*th*, *Saturday*. — By 12.30 A. M. we had made a good mile from our camp, and halted for dinner. The weather continued bright and pleasant, and a few cirrus clouds were all that could be observed. The island shows more plainly than yesterday, but no water could be seen. At two A. M. resumed our march, and advanced everything another good half a mile by 5.30 A. M. Here there was but a poor place to camp, and, as I was closely occupied with getting sights, I sent Mr. Dunbar ahead to choose a place. He informed me that a quarter of a mile ahead there was a good place, and that, though

there had been several leads open, they were now closed, and we might sled right over. I gave the order, therefore, to go ahead, and returned to my work of a Sumner. As I have to carry my instrument box on a dog sled, my movements and those of the sled do not correspond, and I generally have to send to the rear to get my box brought up, and keep by it during the interval between sights to prevent it getting out of my reach. Mr. Dunbar had gone ahead to get a good hummock to look for the water. Much time elapsed without Melville coming back for the second fleet, and I could not understand why. Finally I rushed ahead, with my sextant in one hand and my artificial horizon in the other, and at last found the cause of the delay; the ice had opened again, and left us in a fearful mess. The dog sleds had got over and discharged, but could not get back, and Melville was trying to get his two sleds out of the snarl in which he found himself. I saw we were in for a time, and so it was; for not until nine A. M. did we get all our traps into camp, requiring three hours for what we expected to do in one. However, we are consoled, for Mr. Collins shot a seal meanwhile, the dingy got him, and we have another luxurious supper ahead.

Previous to getting sights, I had a mishap which was annoying. Going to the top of a hummock to take a look at the land, Mr. Dunbar and I had to go out of the road and jump some rather wide openings. Going was all right, but jumping across a four foot opening the ice broke under me as I jumped, and I went into the water up to my neck. My clothes held me up for a moment, and Mr. Dunbar grabbed me by the hood, as he thought, but by the whiskers principally, as I realized, for he nearly took my head off. My knapsack was away to

the rear, and I sent Johnson back for it when I reached the dingy. However, I soon got dry clothes on, and, thanks to the bright sun, my wet ones were soon drying. By capsizing of a dog sled we lost 270 pounds of pemmican. Mr. Newcomb shot a bird new to us, — a Mollemokki. The event of the day, however, was the seal, — a fine, large, fat one, giving us food and boot grease. Not much less in importance was the appearance of a walrus, — the first one seen by us in a very, very long time. Though fired at and hit by Mr. Collins and Nindemann, he remained under water finally after many reappearances.

The land showed somewhat plainly to-day, but I could see no water. Mr. Dunbar thinks he saw it, about seven A. M., to the left of the land, but I do not think he was right.



Bennett Island as seen in the distance, July 19th.

Supper at 10.15 A. M. Our seal was simply delicious. As it was so late (11.05) when we had finished supper, I concluded to sit up for a meridian altitude, which, when obtained, gave me 76° 41′ N. for our latitude, agreeing fairly with my Sumner, roughly plotted as it was. I shall now work my first sight over, with this correct latitude, and see our exact position.

As we have started the lashings of No. 1 sled, and as, in anticipation of rough roads ahead, I have concluded to lighten its load anyhow, we have some work ahead of us before our next march, and shall probably make a late start; I therefore, on piping down at 11.15, ordered all hands to be called at eight P. M. Wind light northwest; barometer 30.40 at 40°; thermometer 31°; sky beginning to cover with cirrus and cirro-cumulus clouds.

Called all hands at eight P. M.; light west breeze, overcast sky; breakfasted at nine P. M. Chipp was discharged from the sick-list, and returned to duty. This relieves Melville, who now takes charge of the road and bridge making, in place of the doctor, who now becomes a reserve.

Set to work repairing and lightening Nos. 1 and 2 sleds. Sent Mr. Dunbar ahead to flag out, and upon his return he told me he had seen the water. I now was able to see it from a hummock alongside the camp, and it was to the *right* of the island. The island itself was much plainer in sight than ever. I am again in hopes that we have made another discovery.

Working my longitude over with correct latitude, I find we are in 76° 41′ N., and 153° 30′ E. Soundings, twenty-three fathoms — mud.

This brings me along to —

July 17*th*, *Sunday*, upon the arrival of which we promptly sat down to dinner. Turned to at one A. M., and started ahead, leaving Mr. Cole and a sled crew to finish lashing and bring on No. 4 sled. At two hundred yards from camp we had some bridging to do, and five hundred yards further some more serious. However, Melville managed it well, and Chipp lost no time in jumping things across, and we finally reached a

stretch of hard ice, over which we could make good time, so that, by 6.45 A. M., I am satisfied we had made one and a half miles good. We then halted and camped.

During our march, from the top of a hummock we saw the water to the right and left of the island, and on the right, through spaces between hummocks, we could see it continue for a short distance. Believing we were close to it Mr. Dunbar went ahead one and a half of his miles, and kept raising the water very fast. From his turning point, he says, he thinks the water about twice as far as he went, making its distance four and a half miles. After he returned we advanced half a mile more, so that, upon camping, we ought not to be more than four miles off. The land seemed as distant as ever. He says the ice is very much better, much of it being smooth and of last winter's growth, and thinks in two days we can reach the water. But we shall see.

To-day I saw some faint "crimson snow" and several pieces of muddy ice. A very curious seal trick came to light by my breaking through the ice. He had two holes leading from the sea connected by a covered way under the snow and thin crust. I suppose it was to give him a resort in case a bear headed him off. On the ice, by one hole, was a cavity in which the seal had lain and rubbed the shedding hair off his skin.

Supper at 7.45 A. M. Divine service at 8.30. Piped down at nine. Called all hands at six P. M.; breakfasted at seven P. M. Under way at eight P. M. About one quarter of a mile from the camp we came to our first opening in the ice, which, simple enough for the leading dog sled, became very difficult for the heavy sleds

and boats, because of a sudden widening. Two other leads beyond widened also, and altogether we had a very delicate amount of work, requiring much care and attention.

Anxious to see what Mr. Dunbar saw before camping, I hastened forward with him to the same high ridge at which he stopped, and which commanded a good view. Here, to my unpleasant surprise, I could see land enough, but no water; and though Mr. Dunbar averred he could see water with streaks of ice in it, I felt inclined to think it was an effect of refraction. After undergoing many kaleidoscopic changes, I began to believe it had settled into land and water, both. The whole back curve remained as a dim outline, but lower down there were apparently dark cliffs and snow patches, but infinitely less distinct and regular. The more I looked the more confused I became, and Mr. Dunbar was nonplussed. At one time I was ready to declare that nothing but ice extended to the land; at another, that the land was very distant, and that we were near an open ocean, with pieces of drifting ice; and again, that mirage had raised and inverted ice hummocks and small peaks, and that there was neither land nor water. This last I abandoned, however, because the light curve above had been too often seen and too well maintained its regularity to be an effect of refraction. I sat and studied this thing for an hour, watching every change carefully with a glass, and I finally made up my mind that part of the dark looking mass was land, but that the lower strata was certainly water. I decided, however, to send Dunbar and the doctor ahead after dinner, to look nearer and speak more surely. Turning back to see what kept Chipp and the boats behind, I learned of the serious ice-open-

ings, and, having got everything advanced a good three quarters of a mile since breaking camp, I halted at midnight and prepared for dinner. Just then Mr. Collins called out to me, "Captain, is that land or water?" Looking south, where he pointed, behold there were some more uncertainties. Was this land or water? If land, then we had seen no water west. If water, then our only land west was the faint curve drawn above and very distant. I was fairly staggered, and Mr. Dunbar looked as if he had been dropped from the clouds. It was a confusing moment to me. The south appearance indicated much greater distance, and if I made for it a S. E. wind might spring up and drift me away from it faster than I could go toward it, and I might, by going to the westward, reach the land or water before a southeaster set me away from it. I decided to await the result of the trip of Dunbar and the doctor.

July 18th, Monday. — At 12.50 A. M. ahead went those two gentlemen, and at 1.15 A. M. we moved along with our effects. After crossing two small leads we struck a long piece — two miles — of smooth ice, made last winter, and got along splendidly. Next to the smooth ice was a long floe of hard, older ice (two miles), and I was beginning to contemplate a good day's work when some unexpected openings occurred among the last winter's ice and threw us back somewhat, and, in consequence, when I halted and camped on the old ice at 5.40 A. M., I think we had barely made two miles good since our breakfast.

The weather had remained pleasant. The sun was frequently obscured, and enabled us to dispense from time to time with our snow-glasses, to the great relief of many who have difficulty in wearing them. Light west airs, the clouds having a slow motion from that direction.

At six A. M. the doctor and Mr. Dunbar returned. They had gone, they thought, four miles ahead of our dinner-camp, and from there had concluded they saw *no water at all, but all land;* and, though they could form no estimate of the distance of the land, they thought the ice extended to its base. This is slightly different from the "open water in two days," but it cannot be helped. After mature consideration, I have decided to keep on heading for the land for several days yet. From the manner in which we have raised it in two days, I hope it is less distant than supposed; and, as the appearance south can no longer be seen, it is evident that the land west is the nearer. *Chipp says he saw a similar appearance north this morning.*

If we can get on this land, we shall, at all events, know that we are stationary, and that the wind will not carry us around aimlessly. Unless the Liakhoff Islands are incorrectly charted, this land is not one of them, for the northern point on the chart is still south of west considerably of our position on the 16th. If there ever was open water north of these Liakhoff Islands, as stated by Wrangel, Anjou, and Hedenström, we may get to it from the south side of this land. "A bird in the hand is worth two in the bush," and I will head for what I can plainly see, instead of bearing away across a shifting sea of ice for something which I cannot see.

Supper at 6.30 A. M. Piped down at nine A. M. Called all hands at six P. M. Breakfasted at seven P. M. Bright and absolutely cloudless. Thermometer 31°. Temperature inside tent No. 6, 48.5°. Under way at eight P. M., and immediately had a stretch of three fourths of a mile, over good ice, bringing up at a lead two hundred yards wide. In this we secured a large

floe piece, and having everything on it by 10.15 P. M., we ferried across. Then we had a mile of splendid going over smooth ice, and when we halted for dinner at 12.30 A. M., —

July 19th, Tuesday, I am sure we had made one and three fourths miles good, over a west and north (true) course. The weather bright and sunny, a few cirro-cumulus clouds only having appeared in the northeast. The wind remained at south, and seemed inclined to freshen. The land was in plain sight, and though I was so puzzled yesterday, I am not satisfied yet that there is no water.

Turned to at 1.50 A. M. and went ahead. For two miles we had a good road, and then we came to a fearful mess of small ice lumps and water, with a rare large block. It was the kind of ice over which one might walk, but dragging anything was out of the question, while a boat would be knocked to pieces. Some fearful disturbance has occurred here at some time or other, and huge blocks have been reared up on end, and at all angles. Traveling looks something like this : —

In vain I climbed up several large hummocks and kept Mr. Dunbar running around in quest of a better place for crossing. Melville had already commenced the herculean task of digging away some of these huge slabs to level a road, in case we could manage the water-gaps, which seemed almost impossible, when the doctor said he had seen what he thought a better way of crossing farther to the northward. We hastened to the spot, and by some work and management, I think we can get across this mess and on the level ice beyond. But it was now six A. M. and our usual supper time, and we had made nearly four miles. The work of crossing would probably require three hours; so, instead of continuing at once, I decided to get supper first and proceed afterwards. I am too anxious to leave this mess behind us, to camp on this side of it, and though we have made a good three and one fourth miles already, I must keep the men at it for a little while longer. The barometer is falling rapidly, 29.95 at 44°, and though the temperature is 31°, I anticipate a S. E. wind, and do not want to lose the grip I almost feel I have on the land.

The action of the ice in formation is nicely shown by blocks of wasted (needle) ice, which we pick up and can pull in pieces. The doctor called my attention today to the distinct manner in which the hexagonal prisms were visible, and the vacuole, as well as the lines of successive freezing. The formation is like that of muriate of ammonia, or the basaltic columns in Fingal's Cave. The blocks can be easily separated, flake by flake, vertically, and at each freezing line horizontally. (See Appendix G.)

By 7.20 A. M. everything was up to the edge of the rotten pack, and we sat down as soon as possible to

supper. The sky remained nearly cloudless, and the sun shone brightly. As everybody was complaining of the heat, I exposed a thermometer to the sun, getting 35°. At 8.40 A. M. turned to and set to work, and from this time to three P. M. we had the hardest time we have had yet. Such a mess of loose cakes, rotten ice, water holes, and pack ice I have never seen. We tried everything, bridging, road-making, and finally, by means of rope, to join the moving mass together. Everything succeeded for a few moments, and then came to nothing; and it was only by rushes and jumps and risks that we got everything on solid ice and camped, — four and a quarter miles good. Towards noon clouds rose rapidly from the southward, and covered the sky so as to prevent my getting a latitude, which I very much desired. Called all hands at eleven P. M., and at midnight sat down to breakfast. Soundings in twenty-two and one half fathoms.

July 20th, Wednesday. — Hard as our work was last night I congratulate myself that it was not left till this morning, for we have a thick fog, which would have made our task an impossibility. Temperature 27°, due to the evaporation, for the pools on the ice show not the slightest sign of freezing. Found Foxy dead in the water. He probably had a fit and fell in.

Got under way at 1.30 A. M., and though our work was not so difficult as yesterday, it was still sufficiently trying, and by the time we had succeeded in getting all our things across the one half mile intervening between the hard ice on which we camped and the long level plain beyond, it was six A. M. and I decided to go no further. Tents were accordingly pitched and preparations made for supper. While loading the first detachment of sleds on a cake of ice for ferrying, we were surprised by see-

ing a walrus come up alongside us, and apparently intent upon getting on our cake too. Mr. Collins hurried along with his gun and fired at him, hitting him near the eye. Down went the walrus, and we thought we had seen the last of him. Soon after, however, we heard a sound of hard "blowing" to the northward of us, among the fearful mess of broken ice, and looking along in that direction, we could see large patches of blood on the ice where it had been ejected in breathing. The doctor at once set out on the hard ice to the west, and Mr. Collins on that to the east, while I sent Mr. Dunbar along to the scene. Soon I heard a shot and a cry for a rope, and then four more shots, and, in fine, we killed him and secured the game.

While the doctor was firing at him the walrus was in the water, and, no doubt, if he had been killed at once he would have sunk, but while stunned for a moment, Mr. Dunbar cut a hole in a flipper with a knife, and *rove* in it the doctor's belt, and then one more shot finished him. We hauled him down to camp. He was a young bull, from 1,200 to 1,500 pounds in weight, — more meat than we and the dogs can eat under the circumstances. The choice parts, tenderloin, sirloin, heart, liver, brain, and flippers, will more than suffice for three meals for us, and the dogs may eat all day if they like. The skin will be cut up into pieces and divided for boot soles. The tusks go to Mr. Collins, one of which he gave to the doctor. In the walrus's stomach there were shrimps and small fish like smelt, and numerous sea anemones or sea cucumbers (?).

Fog cleared away about four A. M., but weather remained cloudy and dull. No land in sight up to seven A. M.

We found our walrus stew excellent. It was not as

good as seal stew, the meat being coarser and not so sweet. We shall repeat for breakfast, and carry as much as we can conveniently in the dingy. Piped down at nine A. M. Called all hands at six P. M. Nothing visible on account of fog.

Breakfast should have been ready at seven P. M., but as both our supper and breakfast were cooked by burning blubber, much longer time was required, and it was not until 7.45 that we in No. 1 sat down to our meal. The saving in alcohol has been effected at the expense of time.

Under way at 8.30 P. M., and after advancing three quarters of a mile over our course, W. and S. (magnetic) we came to a broken and confused mass of water and ice, much resembling our recent serious experience, and here I halted the leading sleds. Two of our McClintock sleds had received some hard usage in our troublous trip over the "mess" on the 19th, and needed relashing, and the dingy sled was crippled, one runner being doubled under entirely. Ericksen's dog sled was also *hors de combat*, and much work was thus in readiness for Sweetman. This delayed us considerably, for I could not attempt to cross the rotten and ugly mess before us with crippled sleds, and I dared not leave anything behind me.

At eleven P. M. the wind had got to N. E. and commenced to blow. Rain fell also, and seemed likely to fall for some time. The ice in the opening (one quarter of a mile of lumps, hummocks, and floebergs) commenced moving, and I began to fear it was now impossible to cross. Altogether it was a dreary prospect. Everybody was getting wet. We could not advance over a living, moving, rotting pack, and the increasing wind promised a gale. So I concluded to pitch the tents where we were, as a shelter, and get dinner.

July 21st, Thursday. — At one A. M. the tents came along, and the cooking stoves, and while the cooks pitched camp and prepared dinner, Chipp took the rest of the men back and brought forward the dingy, with walrus meat enough for supper. At two A. M. dinner was ready, alcohol being used as fuel. Rain still continued in squalls, and the ice in front of us was moving before the moderate northeast gale. Clearly this was a case of a lost day, and I accepted the situation.

At 5.30 A. M. the land showed quite plainly between W. S. W. and a half W., and W. by N. Soundings in twenty-two fathoms, and a rapid drift W. S. W. (two points to right of leeward). Supper at seven A. M., and as our bags were the most comfortable things we had at our disposal, we in No. 1 crawled into them at eight A. M. Piped down at nine A. M. During the sleeping time the wind tore around our tents in fierce gusts, threatening to pull them out and whirl them away. Rain fell from time to time. Called all hands at six P. M. Breakfasted at seven P. M. Ice still moving in the lead. Land in plain sight, and much nearer too, extending from S. 87° W. to N. 56° W., both magnetic. Wind strong from east, but moderating somewhat.

The confusion before us was such that I dared not risk trying to cross anything. Large blocks, small lumps, and floebergs were moving along to the southward, and occasionally a large piece, seemingly free, would suddenly be shot up in the air as it was squeezed by larger ones, or its submerged portions became freed from overriding masses. If one of our sleds had been caught in such a predicament, or one of our boats, the result would not be doubtful. The wind seemed inclined to freshen again, and going ahead was out of the question. A quarter of a mile of this living, moving ice would hold a Goliath back.

Looking further north we saw the most promising place yet, which seemingly offered an easy transit across the narrowest part of this ice channel. Sending Mr. Dunbar ahead to pick out the road, I hurried back to bring up the sleds, and at 9.35 P. M. we commenced our first forward movement. Some little pick-axe work gave us a fairly good road, though three jams were threatening to relax and leave water gaps every movement. In fact, hardly had we got the boats through than one of them opened. Meanwhile, a cold fog had shut us in and hidden the island from our sight.

July 22d, Friday. — As but one sled or one boat could be hauled at one time through the passageway above described, it was one A. M. before our last boat was through, and we halted for dinner. We were on a good piece of hard ice, lumpy, but giving fair traveling. This was separated from a much larger piece of hard, old, smooth ice by another ugly mess, which we could get over if it held together; but it was threatening to open at any moment.

Before dinner I had sent Melville forward to cut a road, which was done, and by great good fortune at 2.20 A. M., when we turned to, we got everything through without trouble. Before us there lay a mile of excellent going, which we took so well that at 5.45 A. M., when I pitched camp, I felt satisfied that two miles might be scored as made good from our starting-point at 9.35 P. M. yesterday.

Dunbar and I had gone half a mile further ahead on hard, smooth ice (after passing a ridge at which we camped), and were then brought to a stand by some more confused mess, across and beyond which the fog prevented us from seeing. Though we might have

gone as far as this before camping, I preferred to have a clear stretch at first for our next move, hoping to see the land meanwhile, and perhaps change our course to more favorable ice. Saw several murres, one loon, and many gulls. Walrus meat again for supper, and then, except his flippers, we have eaten all the choice parts. Our dogs have literally gorged themselves on the remainder, and some of them are too fat for comfort.

We are, thank heaven, rid of the wet, slushy travel which tried us so long. So many holes have been made through the ice, either old seal-holes or places where mud has collected, that the surface snow in melting has drained off, leaving good, fine, hard traveling. Our only enemy now is an ice-opening, and unfortunately this occurs frequently.

Piped down at nine A. M.; called all hands at six P. M. The sun shining brightly, though much fog around the horizon prevented us from seeing the land. Under way at 8.10 P. M., and made good time over the mile of smooth ice which lay before us. At the end of this mile we came to some trouble; a mess of loose pack, fifty feet in width, and some rough ice beyond, separated us from hard ice one quarter of a mile distant. However, we made a flying bridge, or ferry rather, and by 12.10 A. M.,

July 23d, Saturday, had everything across in safety on the hard ice, and halted for dinner. Turned to at 1.20 A. M. and went ahead. The fog seemed inclined to lift, and we could see a point showing which, from its bearing N. 40° W. (magnetic), I judged to be the point which yesterday bore N. 56° W. (magnetic). Shaped a course to carry us to the left of it. We came to some good hard ice again after crossing one bad mess, and I hurried along a good mile and a half to a

high ridge, to watch with Mr. Dunbar the reappearance of the land. Upon the ridge we began to see a headland working out from the fog, and bearing N. 84° W. (magnetic), and apparently good ice leading to it. Almost calm at four. At 5.40 A. M. halted and camped, having, I consider, made an advance of two and a half miles west northwest since breaking camp yesterday evening.

The fog now *almost* uncovered the island and enabled me to determine that the land was one island and not two, as I for some time supposed. The bearings of its extreme points were S. 82° W. and N. 27° W., both magnetic. Other bearings will appear in the sketch which I have directed Mr. Collins to make. I do not think it is now five miles distant, and a long, low point of land, sloping to the ice, I think somewhat nearer. Magnificent weather, calm and cloudless, save for a few streaks of cirro-stratus clouds. Sufficient mist and fog rest over the top of the land to hide whatever is in the background; but several have said they saw high rolling land back from the cliffs, which are shown in the sketch. Broiling hot sun, though the thermometer reads 27°. Got a Sumner, and determined our position to be in latitude N. 76° 40′, longitude E. 151° 25′, a change of position since the 16th of twenty-eight and a half miles to S. 88° W. Soundings, twenty and a half fathoms; rapid drift to westward.

Piped down at nine A. M., but I remained up until noon to get a meridian altitude; latitude resulting 76° 39′ 15″. So my Sumner was very nearly exact. In fact we are drawing in so rapidly upon the land all the time that I dare say my Sumner is quite exact. Called all hands at six P. M.; under way at eight P. M. Bright, nearly cloudless weather; an appearance of land to the southwest.

Before getting under way got fresh bearings. The extreme points were found to bear as follows: S. 87° W. and N. 18° W., both magnetic, and the low point at which I headed, west (magnetic). Though the weather was bright and pleasant, a fog-bank was in the eastern horizon and threatened to advance upon us. In order to give this new island a chance to see the "Stars and Stripes" before the fog shut in, our colors were displayed.

For one and three quarters of a mile we advanced over a good road, and then came to an opening with large and small blocks of ice, but yet water enough to permit a ferry. The ice was all in motion, and as everything might change favorably before we were ready to cross, no useless labor was indulged in by getting ready bridges or ferrying pieces. At 11.50 P. M. all our sleds and boats were up. At ten the fog had covered us and shut in the land, while an easterly breeze sprang up that changed our sensations from those of uncomfortable

Bennett Island. Discovered by Captain De Long and Party.

heat to those of uncomfortable cold, though probably the temperature remained unchanged.

July 24th, Sunday. — At 12.20 A. M. we sat down to dinner by the opened ice. Some little excitement was created by the appearance of a seal, which Mr. Collins killed; but it sank before the dingy could reach it, and thus our luxurious supper faded away. At 12.50 A. M. turned to; the ice had been alternately moving east and west during dinner, but had now subsided, leaving a lane fifty yards wide of clear water between us and a neighboring hard floe. I at once decided this to be a case for floating boats, and as soon as I had run a line across in the dingy, and Mr. Dunbar had secured its end, the boats were in turn drawn over. The first cutter upon arrival was emptied, and used to ferry dogs, dog sleds, and loose packages, and in one and a quarter hours everything was across, then we proceeded for a short distance three quarters of a mile, and were again confronted by an ice freshet. Large blocks were being swirled around and carried first west and then east; leads were opening and closing every moment; water lanes opened now, where a moment before a good road appeared, and such a state of activity as we have not before seen. Beyond this lay a stretch of good hard ice, and better than that a lead of water on our course west (magnetic), and fifty to one hundred feet wide, while extending as far as the fog would permit us to see, which, it is true, was not far. But the sliding, shifting mess, before alluded to, bothered us exceedingly; though there were three dog-sled trips for each sled, and four trips for the men, a new way had to be found each time, going and returning, and it was not until 6.40 A. M. we got all things over and camped. Mr. Collins, however, at 6.30 shot a seal, and we know

that to-morrow we shall have a seal for supper. The land showed just once, about 5 A. M., and we are seemingly quite close to our point. It still bears west, but hardly had we seen it than down shut the fog thicker than ever.

Supper at 7.30. Divine service at 8.30. Piped down at nine A. M. Immediately after a cry was raised "a bear," and away rushed three or four in pursuit. We soon heard two shots, but at 9.45 A. M. all returned without any game. The natives fired at about one thousand yards, but rather wildly, I imagine. Bruin is described as not very large, (sour grapes?) and of a dirty brown color.

As I was very tired upon turning in, I at first slept very soundly; but towards morning (*i. e.* evening) I became wakeful. During one of these breaks, I heard two shots fired at some distance. Supposing it to be another wild goose chase, I paid no attention to it, and resumed my sleep; but at six P. M., when Mr. Cole called all hands, I learned that at four P. M. Görtz had killed a bear. Bruin came within five hundred yards of the camp, and Görtz crawled within one hundred yards of him unnoticed, and planted his two bullets with good results.

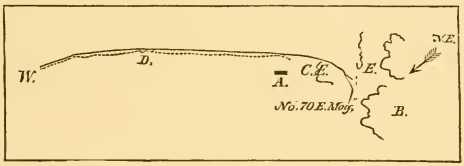
Fog still continues. Light airs from east. Temperature 28°. What lovely weather for the last week in July! Breakfast at seven P. M. Under way at eight P. M. Start fleet where lead bent to west. Go down it in dingy. Lead closes. Much trouble. Strike hard ice finally, but much difficulty in getting gear up to it. Succeed by 12.45 A. M.

July 25th, Monday. — Sent Dunbar ahead, across an ugly mess. He and doctor go together. Strike hard ice, and at its edge they see low point, through fog,

one eighth mile distant, bearing west. Turn to at 1.45 A. M. Very ugly time crossing mess. Little or nothing accomplished in distance by six A. M., our usual supper time. Conclude to work all night. Land suddenly shows plainly, and we seem about one mile from it. Moss plainly seen on the face of the cliffs. Go ahead at eight A. M., and from that time to noon, frightful work: ice opening, swirling, swinging us off from land, separating our things in spite of us. Rain sets in and continues in showers. Get our things together and dine at 12.45 P. M. Getting our reckoning straight at the expense of rest. Under canvas to avoid rain. Apparently we are drawing into a bay making an indentation on south side of island. Rain ceases. Turn to at two P. M.; go ahead. Simply fearful work which I can never forget, and ending at six P. M. in a fog which hid everything. Got on a piece of good ice and pitched camp. Bear meat for supper. Twenty-four hours since we commenced work. Wind S. E. Temperature 30.5°. Tired, cold, wet, hungry, sleepy, disappointed, and disgusted; but ready to tackle it again to-morrow. Piped down at nine P. M. This affords me a chance to return to our natural way of living, working by day and sleeping at night.

July 26th, Tuesday. — During the night I was frequently awake, and could hear the wind getting up, and occasionally the rain pattered down. As I gave everybody a good long rest, it was eight A. M. before all hands were called. I then found a northeast gale blowing, a thick fog, and only unsatisfactory glimpses of the land now and then obtainable. The ice to the eastward of us was all in motion, and much water and drift-ice pieces lay between us and the land. Several of the watch declared that during the night, when they saw

the land, it was much nearer than when we camped; and Mr. Collins, who turned out during the night, said we were in front of the valley, and he could see clear water between us and an ice-foot, or strip of ice next the land. The situation I think is as follows: —



A. Our position.
B. Ice rapidly drifting to S. W. before wind.
C. Water and drift pieces.
D. Ice-foot or strip of fast ice.
E. East end of south side island.
W. West end of south side island.

I think we are far enough under the lee of the point east to escape drifting with the ice pressing down along the island, and passing the point east, even if we are not in an eddy so created, and thus pushed in closer to the land. As nothing can be seen clearly, it would be folly to move into a probably endless confusion, and I shall therefore wait until some plan can be safely carried out.

I do not think I shall ever forget yesterday. Such a time of difficulty and vexation can be experienced nowhere else. Such a shifting of ice and opening of leads! Hardly had we commenced to move our things along what seemed a fair road, than the road broke up; ice broke under us, ice slid away from us, ice moved to the right, when we wanted to go to the left, and *vice versa*, and each installment of provisions got safely across was considered by me as barely rescued from destruction. And all this time the land, not one half mile off, was tempting us by its solidity, and appealing to our desire for rest by its moss-covered hills and slopes.

At eight A. M. yesterday, when we concluded to go on, and worked for twenty-four hours, so many good roads, each leading seemingly directly on shore, presented themselves, that I was embarrassed in a choice. In fifteen minutes they had fallen to pieces, and became puzzling masses of ice and water. There was no question that when I gave it up at six P. M., everybody was used up, and could not possibly have gone further. Everybody was wet up to his knees, stiff legs and cramps annoyed us until we had been an hour or two in our bags, and we were too tired, in fact, to get the rest we stood so much in need of. However, we are all right again this morning, and none the worse off, better off, in fact, for if we had not put in the twenty-four hours in full, we should have been out in the heavy drift ice, and probably miles away from the land by the time this gale is over.

At noon the fog broke away and showed the land for a few moments. We were exactly as I had supposed and indicated by the sketch on the preceding page. The pressure of the ice in swinging off the east point has backed us in toward the bay, and between our floe and the land there is about two miles of water nearly clear of ice. Jammed against our floe are a number of large blocks and hummocks, offering serious difficulty to any attempt to launch our boats. On the off side of these hummocks the sea is breaking considerably. The wind tears around us in fierce gusts. No. 6 tent has been twice blown down. We shall see what the state of affairs is after dinner. Dined at 12.30 P. M. luxuriously on bear stew.

By 1.30 the land was again in fog, and otherwise the situation was as before. My desire was to go ahead, but prudence told me to wait until the weather moder-

ated. The barometer is still falling, the rain beats down from time to time, and nothing can be seen through the fog. I decide to wait for an improvement, and then I shall push on in the second cutter and try to land some provisions.

Soundings in thirteen fathoms; no drift indicated. Our ice is evidently jammed tight. Probably at the first chance the loose hummocks now pressing against it will slack off and leave us place to launch our boats, even if our floe piece does not go bodily in toward the land.

During the afternoon the ice scene was constantly changing. At one moment ice seemed to reach from our floe to the land; at another time lanes of water were seen, and once our floe was left as an island, while it would have been possible to launch a boat and reach the shore. I confess I was tempted to try it, but I realized that the whaleboat could carry nothing more than her crew safely until her garboards were repaired, and that it would take six or seven trips of the two other boats to carry our effects. The whaleboat has leaked badly each time she has been floated, and the weather to-day (the first chance for repairs) has been such that Sweetman could not handle his tools. Before I could have got one boat in the water ice shoved in between us and the land, and we were once more helpless. It seems as if Providence were directing our movements, for the floe upon which we camped last night is the only large piece of ice to be seen; all else is confusion and trouble. Had I gone farther, or stopped short of this place, it is hard to say where we should be now.

We are moving west slowly, about a mile or a mile and a half from the land, and are now (seven P. M.)

abreast a large glacier, whose broken edge (it may be twenty feet high) we can see with a glass. I have watched carefully all day for a landing-place, but not one has shown. The coast is either steep cliff or glacier, and neither is a successful landing-place. The barometer is now at a stand, — I think 29.63 at 33°, — and, though rain is occasionally falling, and the sky is dark and threatening where the fog does not hide it altogether, I am in hopes the weather will improve during the night. Supper (bear stew) at six P. M. Piped down at nine.

July 27th, Wednesday. — Called all hands at six. Breakfasted at seven. The wind has veered to E., and is dying away. A thick fog continues, hiding everything fifty yards distant. The barometer is rising, — 29.67 at 36°, the temperature is 28.5°, from which two things I anticipate clearing weather. Meanwhile, we remain where we are. "Hope deferred maketh the heart sick." Patiently and hopefully have I waited all the forenoon for a clearing, but still, at one P. M., does the fog hang about us impenetrably. The barometer still goes up (29.72 at 38°), and the temperature is 30°.

Soundings in sixteen fathoms water, and I am afraid we have drifted down abreast the point west, and are too far west to hope for any benefit from the bay in which yesterday we shoaled our water to thirteen fathoms, in which case we are now beginning to open the west face of the island. This will be the last forlorn hope for open water in this neighborhood.

And yet there is much to be thankful for; everybody is in excellent health, in spite of our terribly hard work; the appetites are something wonderful to think of, and our sleep is sound and unbroken. Forty-one days of

our march over the frozen sea have had no bad effect. Our bear is so nearly consumed that for supper we have only half our usual ration to serve out. (In five meals we have eaten about 250 pounds bear meat. The gross weight was probably 450 pounds.) The only trace our marching shows on us is tender feet, and that probably arises from their being so often wet. Wading through pools would make wet feet if our foot gear was changed every hour.

Chipp described to me the queer way in which the man on watch "calls" his relief. Instead of calling him, which would wake everybody else up, or of crawling over to him, which would also awaken everybody, a boat-hook is employed. Chipp says, while awake the other night he saw, to his amazement, a boat-hook slowly coming through his tent door, and poising a moment over Sharvell, poke him vigorously in the back. To show how soundly the man slept, it is worthy of mention that he merely tried to brush it away, as a troublesome fly. This ought to make a good Arctic sketch.

At six P. M. had supper. At 6.45 the fog lifted a little, and showed us the land, seemingly about half a mile off. We have drifted along shore since last evening, and have left on our right hand the glacier which we were in front of last night; but ahead of us, and apparently extending in to the land, was a very heavy floe of blue ice, separated from us by a few insignificant openings. Such a chance was not to be lost. All hands were at once turned to, and at 7.15 we went ahead with all four sleds, officers dragging also, and then bounced along the boats, and in one hour we had everything on the heavy floe. This we now found to be one and one half miles in width upon going over it,

and we were still separated from the land by a half mile of broken ice, water lanes, etc. I at once made up my mind that it could not be done to-night, and that I had better devote a day to it.

The wind had veered to E. S. E., was blowing fresh, and rain began to fall steadily, and when, at 10.45 P. M., just inside the blue floe edge, I gave the order to camp, I think I did a very prudent and sensible thing.

July 28th, Thursday. — Called all hands at seven. Breakfasted at eight. Windy (E. S. E), foggy, and disagreeable. Land in sight at times. We have gone a short distance to westward. Temperature 29°. Under way at 8.50 A. M. Sent Mr. Dunbar ahead, and after a while we succeeded in crossing the broken ice which had stopped us last night. Here we had a small floe, across which we speeded. The fog now shut in impenetrably, and I feared we were in for a troublesome time. Mr. Dunbar returned, however, and informed me, that after crossing this floe we should find large ice blocks, with only two-foot openings, and that these extended to the ice-foot, or fast ice, and that, moreover, he had climbed up on the ice-foot, and advanced one hundred yards over it toward the land. This was too good a chance to lose, and away we went. But though we made all haste, and got over our last ferry, and across the small floe in splendid time, when we reached the further edge we found everything fallen to pieces, and more water and rapidly moving ice than we could undertake. Much of the moving ice looked like small bergs broken off from a glacier foot, and from the rounded lumps of ice on top, and their almost straight edges, I am inclined to think they were ice-bergs. By 12.30 P. M. we had everything up to the floe edge, and halted for dinner.

The sun now tried to break through the fog, and I hoped for a clearing; but at 1.30 P. M., when we turned to, the fog was as thick as ever. The situation had improved somewhat, for another floe piece had now come along, and a few loose pieces offered a convenient bridge. Away we went, but the floe piece was a small one, and we soon reached its edge. Here was another confusion, but we could make out a larger floe ahead. Everything was embarked on an ice-cake for a ferry-boat, and a hauling line run to the floe. By great effort we got our piece clear by four P. M. and commenced to haul over. Suddenly everybody gave a shout, "Look!" Away up over our heads 2,500 (?) feet towered the land, and we were sweeping past it like a mill-stream. Hurriedly sounded in eighteen and one half fathoms. Soon our floe was reached. Away we jumped our sleds and boats, and, seeing two or three large cakes nearly together, ran everything rapidly over until we at last stood at the base of the ice-cap. It was a narrow squeeze, for the men with the tents and remaining loose provisions on their shoulders had hard work to run fast enough to get on the last cake before the other cakes were swept away. Now that we were on the last cake our situation became critical. We could not get up on the ice-foot, for ten feet of water and small lumps intervened, and we were sweeping along by it at the rate of three miles an hour. Our cake was none of the strongest, and in the swirling and running masses, and small bergs, I feared we should be broken up and separated. It was an anxious moment. The southwest cape of the island was not half a mile away, and this was our last chance. Over two weeks of dragging and working to reach this island seemed about to be thrown away. I soon noticed our cake begin

to turn around, and saw that it might be whirled into a kind of corner against the fast ice, where, if it remained long enough, a landing might be effected. "Stand by," was the order now, and with sled ropes in hand we waited the trying moment. Soon our cake caught and held. "Now is the time, Chipp!" I shouted, and away we went.

One sled got over on the rough ice-foot all right; a second nearly fell overboard; the third *did* fall overboard, dragging in Cole; and a piece of ice had to be dragged in by sheer force to bridge for the fourth. When I started the St. Michael's sleds, they seemed to stick somewhere. Watching our cake closely, I saw signs of its giving way. "Away with the boats!"—but how? Nindemann sang out, that he thought we could float the boats below, and haul them over. No sooner said than done, and down they went into the water. The men were hurried from the sleds to the boats, and I saw the first cutter just beginning to haul out, when away swept our ice-cake, carrying Melville, Iversen, Aneguin, and myself, with six dogs. Wilson had carried one load of dogs over in the dingy, but he could not get back for the remainder. Chipp was on the ice-foot with the boats, and I knew he could look out for them, and I felt pretty certain we had saved everything For ourselves, on the drifting ice-cake, I had some little anxiety, but one corner of our cake fortunately soon after drifted near a fast berg, and by making a flying leap through the air, we escaped in safety. At last! But though standing still, we were not ashore. The ice-foot extended out from the land, and was a confused mass of piled up ice-blocks and ridges, — honeycombed, cracked, and broken, — and presenting a simply impassable road for travel with sleds. Glad

LANDING ON BENNETT ISLAND.

enough was I to get a solid foothold anywhere, and I gave the order to camp at 6.30 P. M. (our first sled having got on the ice-foot about five), everything being hauled in as near to the land as possible, say fifty feet from it. Rocks were occasionally slipping down and falling into a little stream of water at the foot of the cliff, the stream being where the thawing of surface ice has left a channel about four feet deep.

The face of the cliff was literally alive with dovekies. Supper at 7.30 P. M. At 8.30 P. M. all hands were called to muster and, led by me, everybody waded, or jumped, or ferried over to the land, where we held on as well as we could to the steep slopes of débris, while our colors were displayed. When all had gathered around me, I said, "I have to announce to you that this island, towards which we have been struggling for more than two weeks, is newly discovered land. I therefore take possession of it in the name of the President of the United States, and name it Bennett Island. I now call upon you to give three cheers." And never were three more lusty cheers given. With great kindness three were then given for me.

I now change the date to the correct one, and record that at 8.30 P. M.,

July 29th, Friday, I added Bennett Island to American soil. Our landing cape I name Cape Emma. Piped down at nine P. M.; fresh E. wind, thick fog; ice off shore rapidly moving west. The birds kept up a fearful chattering all night, but we slept well in spite of it.

July 30th, Saturday (correct dates hereafter). — Called all hands at seven. Breakfasted at eight, and at nine A. M. turned to. Our plan of operations for our stay was put into execution as follows: —

Chipp, Nindemann, Ericksen, Lee, Bartlett—Tidal observers.

Collins — Sketches, and general collection of facts.

Newcomb — Natural History, Flora and Fauna.

Dr. Ambler — Geological work, and collection of facts.

Dunbar — Looking for game, etc.

De Long — Astronomical observations, barometer, compass variations.

Crew generally — Getting murres' eggs, drift-wood, flowers, and other specimens.

Before noon I had received moss, scurvy grass, grass, tufa, lava, cryolite (?), yellow flowers (curious differences in these flowers), *amethysts;* and in the afternoon I received from Mr. Dunbar two eggs of murres, large as hens' eggs, and spotted. And at three P. M. Johnson brought in a piece of reindeer horn with moss on it. Dunbar made a small collection of drift-wood, but saw no way of getting a lodgment on the island, and no signs of game. Latitude at noon 76° 38′ 17″ N. Barometer 29.80. Temperature 31°.

During the forenoon the tide was ebbing, and though the wind was W., the ice was driving along to the westward at a great rate. Large floes brought up against our ice-foot for a moment with a jar that caused it to tremble, but it stood firm, and the floes split and broke and swept along. The pressure was tremendous.

The collections are coming in so rapidly that I can but just notice them by a word. Melville found a *vein of bituminous coal,* and brought a large lump. Doctor found down from some fox or rabbit, also rock tripe, mosses, and more flowers; nine dozen murres and dovekies brought in up to four P. M. Drift-wood accumulating. One piece chipped with an axe at lower end like a fence-post; another burned on end. We

have already collected enough fire-wood for two meals, and with a coal-mine "handy by," and birds in thousands, we need never want for a warm meal.

The geological formation of Bennett Island is thus described by Dr. Ambler: "It is certainly of volcanic origin. It is composed of trap-rock: a species of feldspathic rock, igneous rock with silica caught up in it in masses; trap-rock with globules of silica; trap-rock containing globules, which rock being broken shows the globules of the darker color sticking in the matrix, while the portion of the mass knocked off will show a complete mould or bed. The globules are about the size of a pea, receive a bright polish from the finger, and are soft enough to be cut with a knife; silica, very light stone, tufa, I think, of a light brown color, spongy in appearance, as if blown up by gases; lava of different colors, varying from a yellowish brown to a dark green; clays almost the color of bricks; débris from the sides of the cliff being disintegrated portions of this red seemingly baked clay.

"The face of the cliff (Cape Emma) is in six terraces of igneous rock, separated by other strata imposed, of the red clay stuff which contains most of the silica. The amethyst was found in a matrix of quartz imbedded in the trap-rock. The stalagmite and stalactite were found upon breaking open a mass of trap-rock, found lying on the beach, and could be easily removed by the finger. The stratification is horizontal; fossils seen. There is also a white stone with very much the appearance of gypsum. There are two varieties, one occurring in tabular masses, with glistening sides when held in the light, and the other of a dull, opaque white, and in rounded masses which show the action of water. Both varieties can be cut with a knife, and form an

opaque white powder, which effervesces upon applying nitric and acetic acids."

The bituminous coal is abundant, and burns readily. Melville thinks it has from fifty to sixty per cent. carbon, but to-morrow he will experiment further, and I will note his remarks.

Unfortunately, the forenoon and afternoon were both cloudy and foggy, and I could get neither time sight nor azimuth. A landslide occurred at 6.30 P. M., large masses of rock and red clay being hurled down from the summit of Cape Emma.

From our observations of tides to-day, it would seem that the flood comes from the westward. Birds for supper at seven P. M.

Measured the water at various distances from the foot of the cliff, — 50 feet, 7 feet deep; 100 feet, 12 feet deep; 150 feet, 16 feet deep; 200 feet, 28 feet. Our ice-foot is kept in by grounded floe pieces, or bergs broken off from the foot of the glacier on the south face. Wind very light; northeast airs; barometer at nine P. M. 29.84 at 37°; temperature 30°. The tide measurements were made by a pike-end stick (a paddle with a chisel end) stuck in the bottom ice, and held in rigidly against the face of a rocky cliff (Rudder Point). The graduations are to inches, — half inches, and quarter inches, being estimated by the observers. The first reading was taken at 10.26 A. M. by my watch, and subsequent readings hourly.[1]

July 31*st*, *Sunday*. — Called all hands at seven. Weather cold and foggy. Mr. Dunbar having expressed a wish to go along the south side of the island, and it agreeing with my desire to know more of that section, I this morning gave him permission to take

[1] For this and subsequent measurements see Appendix H.

Alexey, Aneguin, five dogs, and a dog sled, and remain away forty-eight hours for that purpose. He will start after dinner, carrying provisions, lime juice, sleeping bags, knapsacks, arms, and ammunition, and a compass, glass, and measuring line. I have instructed him to take all possible bearings and sketches, and if he is able to get up a hill-side to look carefully southwest for land. At two P. M. he started, to be back by or before noon on Tuesday, August 2d.

The bird-hunters were out again this afternoon, but with rather poor luck. They barely got enough for supper. The birds are becoming shy, and at the first rock hove down from above fly out in clouds and keep on the wing. Hundreds and perhaps thousands remain in the niches and crevices, but they are out of reach and out of sight. Melville experimented with the coal to-day, using a stove built of stones. The fire burned until choked with its own ashes. The result gave fifty per cent. of combustible matter, though of course we could make no quantitative analysis. The shale and slate burned with it, giving forth a gas like coal gas, or petroleum gas. No sulphur evident. The coal was merely the out-croppings of a vein extending down the mountain side abreast the camp, and picked off easily; and further back, or deeper, the coal was no doubt better. Hematite, from which brown metallic paint is made, was also found.

Dinner at one, supper at 7.30. All three meals to-day have been of murres, old and young. Delicious food! For a change from stew, our ordinary way of cooking, we in No. 1 had them fried for supper in bear's fat, and a more luxurious meal I do not recollect having had. I must here note that our water supply is obtained from streams running down the mountain side, sweet and fresh.

At 8.30 P. M. read divine service; at nine piped down.

August 1st, Monday. — Called all hands at six. Breakfasted at seven. Wind W., light. Upon mature consideration I have decided to send Chipp with the second cutter and six men to have a look at the west side of the island. Upon walking out to the Rookery yesterday, I saw a more distant cape through the fog, and bearing N. 31° E. (magnetic), Rudder Point bearing S. 10° W. (magnetic), and Ericksen and Kaack walked out to it and said it was only three miles distant. The ice-foot breaks off, however, just beyond Rudder Point, and a stretch of water takes its place, making in to some little amount of beach. Beyond the distant cape Ericksen said the land trended more to the eastward and was lower, and I am of the opinion that if Chipp is successful with bearings and soundings on his journey we can make a very fair chart of the island. Mr. Collins accompanies Chipp to make sketches, etc.

At ten the party started, all hands dragging the second cutter along beyond the Rookery; but upon arrival near the edge of the fast ice, instead of the stretch of water along shore, the broken pack was jammed in close. Chipp here halted his party to wait for a change, while the rest of us returned to camp. I sent Mr. Newcomb out this morning to see what effect ten shot cartridges would have on the birds. Before noon he had got forty, but the birds were extremely shy, and he could not command a choice of position from his perch on the dizzy cliffs. He had a narrow escape after firing his last shot, — a large piece of cliff tumbled from the place he had barely left. We dined at twelve on pemmican, reserving the birds for supper.

Except supper the night of our arrival, and breakfast

the following morning, all our meals have been cooked with drift-wood. Chipp carries a gallon of alcohol with him, but he will of course avail himself of any drift-wood. Dunbar depends entirely on wood, because he will not leave the land-ice.

Weather at noon still overcast and foggy, but I am in hopes of a clearing. I must get a longitude before leaving. Thursday, the 4th of August, is the day I appoint for our start toward the Siberian Islands. Calm. Temperature 29°. Sent out a party after dinner to bring in the fire-wood which Ericksen and Kaack piled up yesterday. The men sent out to bring back the wood report that Chipp had just started afloat with the second cutter. Newcomb came back at eight P. M. with quite a collection.

August 2d, Tuesday. — Called all hands at six; breakfasted at seven; pemmican, etc. After breakfast sent out some bird-catchers. At ten A. M. Mr. Dunbar returned. From his report, verbally made, he has been about fourteen miles along the south face. He brought back some mosses, stones, and drift-wood, and an old bone which may have been that of a musk ox (?) or of a walrus. No game of any kind was seen, but traces of bears, foxes, Arctic hares (?), and grouse (?) were found; bear-tracks and a bear's winter house, divided into outer and inner apartments at right angles, Arctic hare (?) wool, grouse droppings. The extinct volcano, which we saw to our right before landing, and which I supposed to be at the shore, was three quarters of a mile back and about four and a half miles from our encampment. He saw two glaciers, and thinks they unite at the top. The further and larger was three miles across its face, and its edge was from fifty to sixty feet in height. This is the glacier abreast of

which we were on the 26th, and upon which it would have been impossible to land. It certainly looked tempting then.

Three hours after leaving camp he came to a valley through which a stream of water flowed. It was here that he found the musk ox (?) horn and a track of a bear. Here the ice-foot ended, and he took to the beach, but finding the shore becoming bold and steep, also, he came back half a mile and camped. He encountered at this place a large amount of drift-wood, a great mass of it sticking out of the earth like a dock fallen to decay. A hundred feet above the sea-level, and five hundred feet up the slope, was more of this drift-wood, probably carried there in the course of years by the gradual upheaval of the land. Next morning, August 1st, he left the sled and gear, and started with Aneguin and Alexey, and the dogs, to try to cross the mountain. After ascending about one thousand feet (at which point he picked up some marine shells) he was shut in by thick fog and soon after returned. He next attempted to cross the foot of the big glacier, but after going about three miles was obliged to give it up. He found cracks in the glacier one foot wide, but widening below, and he could hear the roar of water several hundred feet beneath him. Large patches of crimson snow were abundant on the ice-foot.

A N. W. gale has sprung up during the forenoon, and is blowing the ice off shore, where the land ice ends beyond the Rookery. Much water is consequently between us and the pack west and southwest, and Nindemann reports that from the Rookery he could see large lanes of water making to the southwest, and the ice was constantly separating to form new ones. Chipp ought to come back flying at this rate.

Weather cold and very disagreeable. It is impossible to keep warm, and my feet have nearly frozen. Thick clouds are flying rapidly over the sky, and those people who have not seen nimbus clouds in the Arctic ought to be here to see the rain clouds and the ragged threatening edges they show. I would like very much to get the height of this bluff in front of which we are camped. But though it is variously estimated from 1,800 to 2,500 feet, my sextant measurements only make it 300, and I shrewdly suspect that my sextant is nearer right than wrong. It is so positively dangerous to attempt to climb on account of the rottenness of the cliff, that if a man slipped he would inevitably break the barometer if not his neck. Aneguin had a narrow escape yesterday with Mr. Dunbar; climbing a cliff after a bird, he slipped, and after sliding rapidly toward destruction, just barely caught with his nails and fingers as he was about going over a precipice to the glacier sixty feet below.

The bird-hunters were unable to get a single bird, and in consequence we had our last birds for supper. Drift-wood enough was brought in to cook to-morrow, and enough remains behind to last one day more. During the evening rain fell occasionally. The wind still blew a gale, and though we were somewhat protected fierce gusts took us, threatening to blow our tents away. The doctor is quite sick. The birds have not agreed with him, and pains, etc., are the consequence. Piped down at nine P. M. Though I have marked the wind N. W. it is possible that sweeping around these points may constantly change its direction. The wind may be much different from what I marked it, though judging by the clouds it is N. W.

August 3d, Wednesday. — Called all hands at six; breakfasted at seven. Strong wind yet from N. W., with mist, fog, and occasional rain. Clear water for two miles off shore southwest, ice beyond. Barometer, 29.73 at 36°; temperature 28°. At 9.13 A. M., this morning, high water. Bartlett noticed that the highest tide-mark on the rock was one foot higher than the 3′ 1″ on our gauge. Of course it must be remembered that the zero of our scale is where it is stuck in the bottom ice.

At 12.30 P. M. Chipp returned, having been some seventeen miles along the coast. He brought back many stones, mosses, and some eggs, and Mr. Collins made some excellent sketches. But as Chipp kept a good diary he can hereafter make me a detailed report and I need not itemize here.

The weather during the day has been simply disgusting. Fog, rain, or mist as wet as rain, snow-hail, — cold and sharp gusts of wind. At six the wind was W.; barometer 29.68 at 36°; temperature 28°. Too foggy to see whether ice or water is next our ice-foot.

August 4th, Thursday. — This is the day which I appointed for leaving, but it is ordered otherwise. During the night the wind increased to a gale again, and upon calling all hands at six A. M. we found ourselves shut in by fog, while a pitiless storm of rain, snow, and hail beat down upon us. Seaward nothing can be seen, but whatever there may be the weather is unfit to expose a dog even; the wind where we are is about W. N. W.

Filled out one of our blank records to be left behind, in the following words: —

BENNETT ISLAND, CAPE EMMA.
Lat. N. 76° 38′, Long. E.
August 4, 1881.

This island was discovered on the 11th of July and landed upon, taken possession of and named on the 29th of July by the officers and men of the U. S. Arctic Steamer Jeannette, which vessel was sunk by the ice on the 13th of June, 1881, in latitude N. 77° 15′ and longitude E. 155° 0′.

It is my intention to proceed from here at the first opportunity toward the New Siberian Islands, and thence toward the settlements on the Lena River. We have three boats, thirty days' provisions, twenty-three dogs, and sufficient clothing, and are moreover in excellent health. We drifted in the pack ice from the 5th September, 1879, to the date at which our vessel was crushed and sunk by the ice, and during that time discovered two islands, Jeannette Island and Henrietta Island, upon the latter of which a party landed. Jeannette Island, discovered May 21, 1881, is in latitude N. 76° 47′, longitude E. 158° 56′, and Henrietta Island, discovered May 25, 1881, is in latitude N. 77° 8′ and longitude E. 157° 45′. Excepting these islands we saw no land since losing sight of Herald Island in March, 1880. Having rested here a few days, we are now detained by a westerly gale, fog, sleet, and snow, and though at times we see much open water to the southwest we cannot yet say whether or not we can take to our boats to resume our journey, or shall be forced to resort again to dragging everything over the ice. The ice travel has been very hard, and two miles a day made good has been our usual distance, though many trips back and forth have been necessary on account of our weights. The ice in this sea is similar to the ancient ice encountered by the British Expedition of 1875, north of Cape Joseph Henry. We have lost none of our original number, eight officers and twenty-five men, and have not had scurvy.

GEORGE W. DE LONG, *Lieutenant U. S. N.*
Commanding U. S. Arctic Expedition.

I do not remember ever to have passed a more dis-

agreeable and uncomfortable day. Outside the tents the wind blew in such fierce gusts that it was hard to keep one's footing on the small pieces of ice left to us, while the driving snow and hail made it impossible to remain exposed. Inside the tents was wet and cold and dreary. Packed close as we were, all moving around inside was out of the question, and our feet were seemingly freezing all the time. Beating them on our ice-floor only made them ache, and using sticks as a bastinado, though making our feet tingle, hardly added to our comfort. We could do nothing but sit and take it, brightening up a little when hot coffee at dinner and hot tea at supper thawed us somewhat.

At seven P. M. the barometer had fallen to 29.55, at 34°, and was apparently on the stand, so I hope we may have a change by to-morrow morning. A prolonged delay here, unless followed by open water, would be a serious thing for us. It would seem that I am not to get a time sight while here, for not once have I had an opportunity.

The gale has loosened much of the rotten rock on the cliff abreast our camp, and during the day frequent showers of dirt and stones have fallen. Last night a terrific amount shot down and threatened to bury us. No. 2 tent turned out to a man, but the rest of us took it quietly. In fact, after our experiences, we are prepared for everything and surprised at nothing.

August 5th, Friday. — Called all hands at six A. M. Breakfasted at seven A. M. Wind moderating somewhat, apparently W. Barometer 29.57 at 34°. Temperature 28°. The clouds seemed inclined to break away, and the sun threatened to show through, but though I watched carefully during the forenoon, there was no chance to get a time sight, such a mist, or rain

or snow fell all the time, that my sextant and artificial horizon were useless, from the streams of moisture on their glasses. Sent Mr. Dunbar to deposit our record in a cairn one mile east from Cape Emma.

I, this afternoon, was forced to have shot ten of our poorest dogs, including Tom and Jim. We have now twelve left: Prince, Smike, Snoozer, Armstrong, Dick, Pilgarlic, Geyotack, Magalan, Kasmatka, etc. The amount of food these ten dogs eat is not compensated for by the work done, and I must think of human life first. The dogs were all worn out or subject to fits.

The sun showed about 4.45, and I got fair sights, giving longitude E. 148° 20′, the best I can do under the circumstances.

There is a berg outside of us aground in five fathoms, probably thirty feet out of water; sixty feet would be height of glacier foot. Barometer rising at eight P. M. 29.63. at 34°. Temperature 28°. We start to-morrow.

CHAPTER XV.

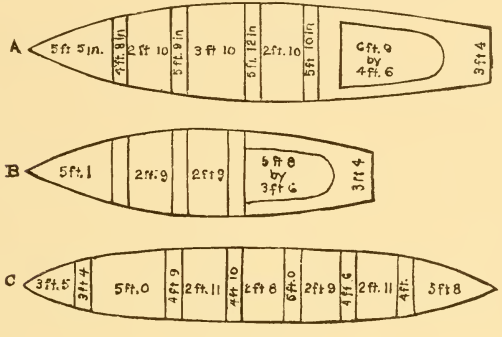
IN THE BOATS.

6 — 30 *August*, 1881.

Leaving Bennett Island. — The Island Disappearing from Sight. — Loading the Boats. — Orders to Mr. Melville. — Reduction of Luggage. — Loss of Dogs. — Two only Remain. — Following Leads. — Inventory of Provisions. — Snow-Storm. — Camping on the Ice. — Appearance of Land. — Shut In. — The Last Ration of Bread. — A Good Run. — Fog. — Preparations for Open Water. — Distribution of Effects. — Instructions to Mr. Chipp and Mr. Melville. — Wearisome Waiting. — Dependence on Tobacco. — Between Two Islands. — The Ice Breaking Up. — Shoal Water. — Land.

August 6*th*, *Saturday*. — Called all hands at six. Breakfasted at seven. A gale of wind from N. W. Snow squalls. Bright sunshine in spots, and generally a queer day. Barometer 29.70 at 32°. Temperature 27°. Mountain side covered with snow. Excellent time azimuth obtained, to be worked out hereafter. Turned to at eight, and immediately commenced preparations for departure. At 9.30 I started with the first cutter full of goods and chattels, and sailed across two miles of water before reaching the hard ice on the other side. Then sent the boat back under oars, and in like manner the second cutter and whaleboat as they arrived; but each boat had to make two trips, and it was not until 2.45 P. M. that the last boat towing the dingy reached the ice, and Bennett Island was left behind us for a full due. I had dinner all ready and

we sat down. Turned to at 3.30, and immediately commenced loading the sleds. When we started in the first cutter the wind had already moderated to a fresh breeze, and by the time I had landed on the ice it had almost died away. Then succeeded the rarest of things in the Arctic — a perfect day. Bright sunshine, almost



The Jeannette's Boats.

A. First Cutter, Captain De Long. *B*. Second Cutter, Mr. Chipp. *C*. Whaleboat, Mr. Melville.

cloudless, and a burning heat, 27°. The island came out of the fog in all its beauty, every line, every snow-curve sharp against the sky. I immediately set Mr. Collins to work making a sketch.

Upon landing on the ice I saw a water-lane making around on each side, and upon investigation I found we were on a large ice island, and that beyond we had a large expanse of water; accordingly I determined to sail the boats around while Mr. Chipp dragged the sleds across. This we did, carrying in each boat sleeping and cooking gear, knapsacks, etc. The first cutter was manned by the doctor, Mr. Collins, Lee, and myself; the second cutter by Mr. Dunbar, Starr, and Kuehne, and the whaleboat by Mr. Melville and Mr. Newcomb,

Mr. Danenhower going as a passenger. We were successful in getting the boats around before six P. M., while the four sleds and dingy did not get across until 7.35 P. M. Camped and got supper ready. Light N. W. airs. Barometer 29.83, at 37°. Temperature 27° in the sun, 25° in the shade. Piped down at ten P. M. Cape Emma was certainly five miles off, — a good day's work.

August 7th, Sunday. — Called all hands at six. Breakfasted at seven. Wind W. Barometer 29.80, at 38°. Temperature 24°. Our usual fog seemed creeping up from the southwest. The top of the island was already swimming in the clouds. As a result of the low temperature of last night, much young ice formed; close to the floes it was one eighth of an inch thick.

A careful look to the S. S. W. showed that with some care we could probably make a mile or two with the boats, but with sleds we could not make a mile in a month. Numerous leads and much broken ice presented insuperable difficulties. Accordingly I determined to make the attempt, and the three boats were loaded to their utmost capacity.

FIRST CUTTER.	SECOND CUTTER.	WHALEBOAT.
De Long,	Chipp,	Melville,
Ambler,	Dunbar,	Danenhower,
Collins,	Sweetman,	Newcomb,
Nindemann,	Sharvell,	Cole,
Ericksen,	Kuehne,	Bartlett,
Kaack,	Starr,	Aneguin,
Boyd,	Manson,	Wilson,
Alexey,	Warren,	Lauterbach,
Lee,	Johnson,	Tong Sing,
Noros,	Ah Sam.	Leach.
Dressler,		
Görtz,		
Iversen.		

FIRST CUTTER.

765 lbs. pemmican.
35 gals. alcohol.
Liebig.
Boat box.
4 tin cases.
1 chart case.
1 calculation box.
3 boxes specimens.
5 guns.
13 knapsacks.
Sleeping bags.
1 cutter sled.
No. 1 sled.
1 dog.
Bread.
Sugar.
Tea.
Coffee.
2 tents.
2 stoves.

SECOND CUTTER.

540 lbs. pemmican.
8 gals. alcohol.
6 lbs. Liebig.
1 boat box.
4 guns.
10 knapsacks.
10 sleeping bags.
Second cutter sled.
10 gals. lime juice.

WHALEBOAT.

Pemmican.
Alcohol.
Liebig.
Boat box.
2 guns.
10 knapsacks.
10 sleeping-bags.
Whaleboat sled.
4 dogs.

At nine A. M., all being ready, we got under way. The dingy was taken in tow with Ericksen in charge of seven dogs. But four jumped from the boat afterwards and did not rejoin us, so that at noon we had only eight dogs remaining of our twelve.

Proceeded under oars, pulling four at a time in the first cutter. This gave us two watches of pullers, for Lee was sent to the dingy afterward as a steady hand, and after breaking through the new ice got into water, and by 12.30 P. M. had certainly made three miles good on a S. S. W. course. The fog now surrounded us, and we had come to a floe island, the water around which was choked at each side. There seemed nothing left but dragging sleds and boats over, and I meanwhile called a halt for dinner

We had left behind us two St. Michael's sleds and four McClintock sleds, — no longer of use to us except as firewood, and the dingy had two days' allowance of that, counting her as fuel likewise. These sleds had done good work, but our traveling now was beyond even their capacity.

Turned to at 1.30 P. M., and I saw a chance to get around to the left of the floe island. Started ahead, but just as I got the first cutter to a narrow opening in the before closed ice neck, the ice came together with a snap and stopped me. Turned back to our dinner place and discharged the boats, and loaded the provisions on the four sleds. Then we all (except Danenhower) took hold at three P. M., and in one fleet dragged the sleds across the floe island. By this time the ice neck to the right had opened, and I was able to pull the boats around to where the sleds were, and again loaded up. Proceeded again on a general S. S. W. course, and, upon coming to a closed place, unloaded, carried things along on our shoulders, dragged boats over, reloaded and resumed our journey, — making by 5.30 P. M., when I camped, a distance of two miles more, or five miles for a day's work.

Wind S. S. W. Temperature 28°. Hard floe for camp. No further progress possible to-night, but a promise for to-morrow.

COPY OF ORDER TO MELVILLE.

U. S. Arctic Expedition.
Cape Emma, Bennett Island,
Lat. 76° 38′ N., Long. 148° 20′, E.
August 5th, 1881.

P. A. Engineer Geo. W. Melville, *U. S. Navy:*

Sir, — We shall leave this island to-morrow, steering a course (over ice or through water, as the case may be) south magnetic. In the event of our embarking in our boats at any time after the start, you are hereby ordered to take command of the whaleboat until such time as I relieve you from that duty, or assign you to some other.

Every person under my command at this time, who may be embarked in that boat at any time, is under your charge, and subject to your orders, — and you are to exercise all care and

diligence for their preservation and the safety of the boat. You will, under all circumstances, keep close to the boat in which I shall embark, but if, unfortunately, we become separated, you will make the best of your way south until you make the coast of Siberia, and follow it along to the westward as far as the Lena River. This river is the destination of our party, and without delay you will, in case of separation, ascend the Lena to a Russian settlement from which you can communicate, or be forwarded with your party to some place of security and easy access. If the boat in which I am embarked is separated from the two other boats, you will at once place yourself under the orders of Lieut. C. W. Chipp, and, so long as you remain in company, obey such orders as he may give you.

Respectfully,

GEORGE W. DE LONG,
Commanding U. S. Arctic Expedition.

At 8.30 called all hands to muster. Read Articles of War, and then performed divine service. Piped down at nine. Soundings in twenty fathoms.

August 8th, Monday. — Called all hands at six. Breakfasted at seven. Wind S. S. W. Temperature 28°. Turned to at eight and commenced to drag the sleds and boats across the floe to a lead on the south side.

I then went ahead, and by 11.50 had, perhaps, made one half mile. Stopped for dinner. Most of our work was dragging, though we had a little boating. At 1.10 turned to and went down a lead one mile, and then were stopped. Cape Emma in sight, bearing N. N. W. Distance ten miles. At three halted. After hauling our boats out and having an impassable dragging road ahead of us, waited for a probable opening. Disappointed, and dragged along everything a little further to some hard ice, when at five we halted to get supper. Mr. Collins got a seal, and Dunbar shot three murres.

Cut up the McClintock dingy for fire-wood. After supper I could find no chance to go ahead, and I therefore determined to pipe down and make an early start in the morning. We had broiled seâl and a taste of murre apiece for supper. We then set to work reducing our luggage to a small compass. Got rid of our knapsacks, and put all our clothing together in bags. This reduces the number of packages, and materially assists us in stowing the first cutter. Supper at six. Turn to at 7.30. Shoot Prince and Pilgarlic. Lose Smike, Armstrong, Wolf, Dick. Two miles by 9.30. Halt and camp. Coffee giving out. Tea for dinner instead.

August 9th, Tuesday. — Called all hands at five A. M. Breakfasted at six A. M. Turned to at seven. Temperature 26°. Loaded up sleds, and dragged them and the boats about one quarter of a mile over the ice, and then were able to float the boats. Nearly caught the first cutter between two closing pieces of ice. Short fleet, then drag again, and at 11.30 had made good south about two miles. Halted for dinner. Twenty fathoms. Turned to at 12.30 P. M., floated boats, and then, by a miraculous piece of good fortune, were able with one hitch to make a good five-mile stretch afloat. The hitch occurred by the closing in of a narrow opening through which I was desirous of pushing the boats. Five minutes earlier and the opening would have served us, but just as we got up the chance was gone. The ice seemed about to close also astern of us, and we had to make a very lively scramble up the side of a big floe, and throw our provisions out with all speed. Then the whaleboat's people had to lend us a hand to drag our boat up this steep incline, which was a hard job. However, it was done, and we proceeded, and when the

time for supper came, 6 P. M., I considered we had made good seven miles to the southward. This is too immense not to glory in, when I remember the hard days of dragging which only gave one and a half or two miles.

Sat down to supper at six P. M. on a hard ice floe, letting our loaded boats ride alongside. It was my desire to keep the twelve dogs we had on leaving Bennett Island, and if we could possibly carry them to bring them with us to the end. But on Sunday, when we were starting, four of them jumped from the boats, and time was too precious to stop and run after them. To-day four more, Smike, J. Armstrong, Wolf, and Dick, did the same thing, and though their doleful howling could be heard long after we had stopped for dinner, I could not spare the time to chase them even if the crowded condition of our boats would have permitted their being carried. But as our boats are so heavily loaded that the slightest motion causes the water to wash in through the rowlocks, carrying dogs becomes a risk. Perhaps the most sensible thing would have been to shoot them all, but, with the island so near, I thought if they escaped from us they might get back and perchance live. So that chance for life was given them.

To-night, however, after carrying four dogs in the first cutter, I came to the conclusion that I was wrong so to lumber up the boat, and much to my regret (and to Ericksen's grief) Prince was one of the two victims led off to execution. Pilgarlic was the other. We now have two of our original forty, — Snoozer and Kasmatka, — and these two I shall keep until it becomes perilous to do so.

Got under way again at 7.30, and by 9.30 P. M. had

made two miles more, when I came alongside a hard floe. Unloaded and hauled up boats and camped. Coffee is getting so low that I shall be compelled after to-morrow's dinner to use tea at that meal and supper both. Nine miles to-day.

August 10th, Wednesday. — Called all hands at six. Breakfasted at seven. Calm. At eight turned to, loaded boats, and at 8.30 got under way. Worked along to the southward under oars, and a light N. E. breeze springing up made sail. At ten brought up by a large amount of ice blocking up a lead, and had to land on the hard floe, discharge and haul up boats, and drag everything one half of a mile "overland" to get afloat again. At 11.30 came to alongside hard ice and got dinner. Three miles made good for forenoon's work. At 12.45 P. M. got under way again, but lost half an hour by getting in and then getting out of a choked lead. N. E. wind increasing. Snow falling steadily. At 3.30 apparently came to the end of the large lead, and ran alongside of hard ice to reconnoitre, and let people run around to get their feet warm. Found that by going northwest a bit I could keep away again. Got under way at 3.45, and had such a glorious run by 5.30 that I seized upon the first large ice-island I met to come to for supper.

Nine miles this afternoon, or twelve miles good between breakfast and supper. Foggy, and steady snow. Bennett Island not seen to-day. Pitched tents for shelter during supper. Much open water. Large leads. Ice broken up into islands.

Turned to at seven and got under way, and thanks to a freshening N. E. breeze had made five miles more by nine P. M., at which time we were stopped by a choked lead separating us from a large water space, and being

well enough satisfied with seventeen miles for a day's work, unloaded and camped.

August 11th, Thursday. — Called all hands at six. Breakfasted at seven. Wind E. N. E. Barometer 30.08 at 32°. Temperature 26°. Turned to at eight. The lead still remaining choked we were forced to carry all our traps about three hundred yards along the ice, and we then floated and loaded our boats. Under way at 8.40, and proceeded until 11.45, by which time with oars and sail we had made seven miles. Came to alongside a floe for dinner. Much thin young ice close in to the heavy floes, the growth of the night. Saw an oogook. Dunbar fired at him but missed.

Turned to at one P. M. and proceeded. Sun occasionally showing through clouds and fog, but I generally steered by the wind, keeping it on our port beam, or a little abaft it. Consequently we made a course generally between south southeast and south southwest.

To save all time and distance, I cut off all the corners I could in steering through the ice, and occasionally crowded through some very narrow places, using pick-axe, and jumping out to lighten boat when she grounded on projecting tongues. Once this afternoon was obliged to turn back and "go west" for a time. In consequence I think we did not make more than nine miles by 5.45, when I ran alongside a drifting floeberg for supper. Mr. Collins here shot a seal, which we shall have for breakfast. Turned to at seven and proceeded, but after going beautifully south for one and a half hours, were caught in a trap and obliged to go northwest for one half hour before keeping away. Snow now began to fall, and at 9.30 P. M. ran alongside a floe piece, unloaded and hauled up boats, and camped. Ran since supper four miles on our course, —

Breakfast to dinner	7 miles.
Dinner to supper	9 miles.
Supper to camp	4 miles.
Total, ...	20 miles.

Wind E. Temperature 26°.

August 12th, Friday. — Called all hands at six. Breakfasted at seven (seal). Turned to at eight and launched and loaded the boats. At 8.20 started ahead and was forced to steer to the westward, and making for two and a half hours about west southwest, then I was able to haul up more to the southward, and made about a south southwest course until twelve, when I ran alongside a floe for dinner. Here we were seemingly brought up by a closed lead, and I did not think we had made more than four miles altogether. Bennett Island showed plainly, its ice-cap towering up like a dome, bearing north northeast, distance forty (?) miles. Until I get sights again I cannot tell how far it may be off. From our experience in underestimating distances when going toward Bennett Island, we may now have fallen into the habit of overestimating. Turned to at 1.15, and after breaking through a kind of Suez Canal, got into a large opening which unfortunately soon terminated, bringing us up against a solid floe. I walked ahead while the sleds were being loaded and the boats hauled up, and seeing a possible chance of resuming our journey afloat, if only a little ice would slack off, I kept everything fast from 2.20 to three, when, seeing nothing gained, we went to work dragging our sleds and boats a half mile "overland," reaching a narrow lane of water at that point. We went south about two miles, when we were stopped by jammed up blocks of ice. It was no use to attempt such work, and at six went alongside a hard floe, unloaded and hauled

up boats, and had supper. At 7.30, the situation remaining unchanged, went into camp.

August 13th, Saturday. — Called all hands at five. Breakfasted at six o'clock. Calm. Crooked lead opened somewhat during the night. Bennett Island, Cape Emma bearing N. 12° E. (magnetic.) Turned to at seven. Under way at 7.15, and by poling, hauling, and dragging got boats along five miles southwest, and then by 11.20 A. M. was forced to come to alongside a small floe piece, unload, and haul out. We were effectually stopped. The continuance of calm prevents any movement of ice, and all around us it lies in closely massed blocks over which there is no sledding, and among which there is no boating. Not a lane can be seen, and not a single large floe, and until a breeze springs up and opens the ice we must wait. Dinner at twelve. Strong appearance of land to south and southwest, and cumulus clouds indicating water.

During the afternoon the sun came out brightly, and gave us a long-wished for chance to get our wet clothing and sleeping-bags dry. Light south air came along occasionally, but the ice remained closed. Toward five P. M. I thought there might be a change, and I ordered supper to be got ready. At 6.30 packed up ready for a start. Temperature 24°, though it has got as high as 32° in the sun at three P. M. At 7.10 got under way, and proceeded about a mile southwest, but was then brought up. Having a hard floe at hand, ran alongside it, unloaded and hauled up boats. Fog setting in with light southeast breeze.

PROVISIONS ON HAND.

65½ lbs. bread (4 days).	46 lbs. sugar (11 days).
43½ lbs. ham.	18½ lbs. coffee (9 days).
74½ lbs. tea (36 days).	20 lbs. beef tongue.

14¼ lbs. pigs' feet.	1,600 lbs. pemmican (38 days).
24 lbs. beef extract (23 days).	53 gals. alcohol (26 days).
	5 gals. lime juice (20 days).

August 14th, Sunday. — Called all hands at five. Breakfasted at six. Wind S. E. Temperature 27°. Turned to at 6.50, and launched and loaded the boats. Started ahead at 7.10 and proceeded, making about a west southwest course. We were terribly bothered with young ice, which was found to the thickness of one fourth inch, and had to be beaten down with boat-hooks and oars before we could force the boats through. Then all the twists and turns we had to make consumed time, and though we sailed, pulled, and tracked our boats until eleven A. M., I do not think we made more than two miles. At eleven we could advance no further, and I ran the boats into a sunken dock and got dinner ready.

During dinner the wind backed to N. E. and freshened, and the ice seemed inclined to open. Pushed ahead at 12.40, and by 2.40 had made about one mile southwest when we were again brought up standing. I now hauled up the boats and pitched the tents. The snow was falling so thickly, and the wind blowing so freshly, that remaining exposed to it was imprudent. I could see no chance to go ahead. Sent Mr. Dunbar across our floe to the south, and he came back at four, saying three quarters of a mile south he saw a lead making south, and one quarter of a mile wide.

The storm increased, and I concluded to defer moving until morning. Supper at six; divine service at seven; piped down at eight.

August 15th, Monday. — Called all hands at five. Breakfasted at six. Wind N. E.; temperature 26.5°. The wind had moderated considerably, but snow was

falling in thick flakes. Some sign of a good lead showing to the westward, I sent Mr. Dunbar out to look at it, and upon his return he reported that it trended to the northward. Nothing remained therefore but to drag everything across the floe to where the lead was seen yesterday P. M. At 7.15 we commenced, and it was a fearful job. The ice was very much wasted, and had numerous holes extending through to the sea. So much snow had fallen during the night that these holes were covered by it, and the first warning any one had was his going in up to the waist. However we got across by going a crooked, roundabout track, but it was 10.15 before we got our boats floated, loaded, and ready to start. Then we were much bothered with new ice and the thick sludge which the snow had made, and at one time I had to resort to hard tracking. But at twelve, when I came to for dinner, I considered we were two miles south of where we started after breakfast. While waiting for dinner Mr. Dunbar shot a seal, which not only gives us a good supper but also provides the two dogs with a meal. At 1.15 went ahead again. During the forenoon I had been much bothered by the sun not showing, and the wind suddenly shifting from N. E. to S. E. But during the afternoon the sun showed occasionally, and I was able to keep a knowledge of our course.

There was very little water indeed, so little in fact, and so much young ice, as to make me more anxious than I care to show or to record. With our provisions running low, and no islands or open sea in sight, each day finds me more and more anxious. Over two months of this care and anxiety is very wearing.

By six P. M., when we stopped for supper, I think we had added three miles south to our day's work.

Cooking seal meat with blubber consumed much time, and it was not until eight P. M. that we were under way again. The wind had now got to east, and the ice commenced to open quite rapidly, sometimes to south, sometimes to west. By ten P. M. we had advanced south two miles, and as the fog prevented me from seeing anything I hauled alongside a large floe and unloaded and camped. Temperature 26°.

August 16th, Tuesday. — Called all hands at six. Breakfasted at seven. Wind N. E.; temperature 25.5°. Loaded the boats and got under way at 8.15, but had hard luck. First, I was compelled to go to the northward to get in a lead running to the southwest, and then with all our crooks and turns I do not think we had made two miles southwest by eleven A. M., when we were brought to a stand. From the highest hummock we could command, but few patches of water could be seen, and no lanes at all. The ice seemed all ready to fall in pieces, but N. E. winds held it jammed closely. I got the latitude at noon, 76° 2′, and we were not so far south as I had hoped. Bennett Island, Cape Emma, being in 76° 38′, we are only 36′ south of it, and as for longitude I can only say it bore N. 12° E. on the 13th, when we saw it last. We are probably not much over forty miles away from it. At one P. M. made another start, and struggled along southwest for perhaps a mile, when at four P. M. we were again stopped. Hoping for a change of wind to the N. W. I have done what I considered a proper thing, that is, waited. If I attempt sledding I shall probably lose some of our provisions by sleds getting overboard in this skeleton pack. Before supper I hoped for a change after supper, but after supper no change for the better had occurred. The wind had backed to N. and snow

was falling thick ; no water which we could use was in sight, and I therefore ordered the boats unloaded and hauled out. We prepared for another night in our wet bags, and hoped for a change on the morrow. Day's work : three miles southwest (?) ; sounding, nineteen and a half fathoms.

August 17th, Wednesday. — Called all hands at five. Breakfasted at six; calm and light west air. Under way at 7.15, and by 11.30 had made about six miles good, on a southwest course, out of eight miles sailed. Here we encountered a large floe, and hoping a narrow vein of water running around it would widen, we got dinner. By 12.45 P. M. it had widened, and we proceeded at such a good rate that by 5.30 P. M. I think we had made six miles more good (southwest). Instead of the closely packed ice of yesterday, everything seemed to have fallen apart by magic, and a light S. W. wind was rapidly opening things before us. Saw an oogook on the ice. Mr. Collins fired twice but missed him. Seals plentiful in the neighborhood of our supper place. Shots frequent, but no results. To the south, appearance of land and fog and open water; soundings in sixteen fathoms. Under way again at 7.15, and till 9.30 made three miles good southwest. Total made good for day fifteen miles (southwest). Camped.

August 18th, Thursday. — Called all hands at five. Breakfasted at six. Calm; temperature 25°. Before starting out a seal was shot and secured. Under way at 7.10, but had such hard luck that by 9.30 we had made only one mile west. Young ice bothered us very much, and though we broke it through with poles our progress was necessarily slow. I tried tracking the boats, but that was no better. One man fell in the water through the treacherous snow-crust and got wet

up to his shoulders. Two openings that I tried to get through closed just as I got my bow entered, and I had to back out hurriedly. The ice was moving to and fro in no definite direction, and seemingly under great pressure. At 9.30 I was regularly brought to a stand, and at ten we commenced to get our seal dinner ready. At 11.30 dined. The clouds broke away a little, and a light N. W. breeze sprang up. At 12.30 P. M. made a fresh start, the ice opening up rapidly before increasing wind; strange to say the openings were west southwest and southeast. I took the first named.

To my surprise, the openings were closing rapidly, and the ice was in violent motion. Twice I narrowly escaped leading everybody into a trap. When we could finally keep away to southwest, it was only for a short time; and, though we ran along merrily before the strong breeze, we had made only six miles southwest by five P. M., when the water came to an end and I had to come to. The wind now freshened to a gale, thick snow fell, the barometer was at 29.52 at 31°, and the temperature 25°, and, wisely or not as the future will show, I decided to remain where we were for the night. No water which we could use was in sight, and sledding is yet out of the question; and, though God knows I am anxious to proceed, I do not see how I can.

Our last ration of bread was served out to-night. Since two days ago our ration of Liebig has been reduced to half an ounce per diem. Since Friday we have coffee at breakfast only, and tea the other meals. Dismounted No. 1 sled to carry inside.

August 19th, Friday. — The wind howled and tore around us until long after midnight. The ice was moving rapidly by our floe, and the second cutter's and

whaleboat's men had to turn out and shift their tents farther back. Called all hands at five. Breakfasted at six. Light N. W. breeze. Temperature 27°. Under way at 7.10, and by twelve had made ten miles on a south course good. At 9.20 we had come to so much open water that I believed the sea was close at hand. With a view of keeping under way all day, and perhaps all night, I ran the three boats alongside a floe to lay in a supply of snow for cooking. This took twenty minutes or so, but we soon made it up in pulling and sailing. The wind was freshening a little, and we were going at about two and a half miles an hour. One of our sleds (No. 1) was dismounted and carried inside the boat, and the other was carried in the bows; so we had none of the wearisome towing and impossible steering of yesterday. Chipp's sled was dismounted and laid across the stern of the second cutter, Melville's being across the bow of the whaleboat. I instructed the boats to keep close to me, and away we went. Commenced getting dinner in our boats, going under sail alone while so doing, and at twelve, just as we were sitting down to dinner, I saw the second cutter lower her sail and the crew hurriedly unload the boat. We had just come through a somewhat narrow passage between small floes, and I supposed it had narrowed too much to let the boat through. I rounded to, and directed the whaleboat to do the same, and we secured to a floe and finished dinner. The wind had now veered to N. E., and ice seemed to come down upon us on all sides. I could not get back to Chipp to help him without being caught, and he could not get to me. From noon to three P. M. he seemed to be continually loading, unloading, dragging over ice, tracking, and poling, so it was only upon his joining me at 3.30 that I learned the trouble.

The ice had closed on him, and, seriously enough, had stove a hole in the cutter's port bow. He at once dragged the boat out and repaired her with a piece of Liebig box. When we stopped for snow I had a sounding taken, and we got nine fathoms water. I naturally supposed we were near the land, and that the everlasting fog alone prevented us from seeing it. At noon I got the lead down again and found fifteen fathoms, so I must choose between a wrong sounding (touching an ice-tongue) or the discovery of a shoal.

I before remarked that the ice seemed to come around us like magic, and that it was moving and swirling about as if in a tideway. As we proceeded, the wind veered to the east, and we found ourselves working among loose streams of drift ice, through which at times we could see the open ocean beyond.

The streams obliged us to make a course about south southeast, and to south and southwest pack edge could be made out, the ice behind it being closely packed together. By 7.30 we had made about six miles good, our boats making so much leeway as to force us to steer much higher than I wanted to go. At that time I could see no land, though our view was exceedingly limited. But the sky looked very ugly, and our further progress might, in our loaded condition, be exceedingly risky.

The second cutter had taken in a large quantity of water and needed emptying, and if we were at the open sea, as I believed, material changes and reductions ought to be made in the stowage of all the boats. Accordingly I ran alongside the pack, unloaded, hauled out, and camped. Hardly had I done so than an east gale broke upon us, and it raged all the evening. Temperature 26°. Soundings in fourteen and a half fathoms (sandy bottom).

August 20th, Saturday. — Called all hands at five. Breakfasted at six. Turned to at seven. Wind fresh, gale from east. Temperature 27°. Immediately upon turning to, commenced making our preparations for sea. This involved overhauling the boats, cutting up sleds, melting snow for water, distributing provisions, and making lists.

The things carried in each boat appear below.

SECOND CUTTER.

1 mast and sail.
1 painter.
15 fathoms small line.
3 lbs. spun yarn.
5 oars.
2 balers.
2 paddles.
1 pike.
14 spoons.
3 forks.
1 dipper.
1 tin dish.
1 glass bottle.
7 sleeping-bags.
5 knapsacks.
1 bag moccasins.
3 hanks twine.
1½ bbls. cotton twine.
1 piece wax.
1 roping needle.
1 roping palm.
1 pap. harness needles.
1 tind. box, flints, steel.
2 doz. wind matches.
1 boat-hook.
1 boat cover.
2 saws.
1 broadaxe.
2 hatchets.
1 rudder.
1 yoke.
1 tiller.
8 sq. ft. cedar board.
1 day's wood, fuel.
1 cooking stove.
1 doz. tin pots.
1 doz. tin pans.
2 brad awls.
2 large files.
3 saw files.
2 gimlets.
2 nail sets.
1 punch.
1 cold chisel.
1 pincers.
1 plane.
1 Bowditch.
1 compass, out of ord.
2 tents.
8 poles.
2 rubber sheets.
3 Remington rifles.
255 cartridges.
Boat box, viz.
1 sq. ft. lead.
1 sq. ft. tin.
1 snow knife.
1½ lbs. salt.
1 lb. tallow.
1 doz. fish-hooks.
2 fishing lines.
2 spools of thread.
2 screw-drivers.
9 gals. water.
7½ gals. alcohol.
1 qt. whiskey.
1 qt. brandy.
1½ bottles lime juice.
7 cans (315 lbs.) pem.
17½ lbs. ham.
8 beef tongues.
4¾ lbs. pigs' feet.
2½ lbs. coffee.
2 pkgs. matches.
3 candles.
1 can-opener.
2 oz. tacks.
1 piece putty.
1 lb. iron nails.
2 oz. copper nails.
½ lb. raw cotton.
1 brace and bitts.
1 small hammer.
1 hand hammer.
1 cutting nippers.
1 spoke shave.
3 chisels.
88 lbs. sugar.
15 5/8 tea.
4½ Liebig ext.
1 pocket chronometer.
1 pocket compass.
1 binocular.
1 drawing knife.
1 whetstone.

WHALEBOAT.

4 oars.
1 mast and sail.
1 boat-hook.
2 tents.
8 tent poles.
1 day's fuel, wood.
8 sleeping-bags.
1 boat cover.
1 bag foot gear.
1 bag clothing.
3 knapsacks.
6 rowlocks.
1 rudder.
1 tiller.
1 paddle.
1 luff tackle.
1 quart whiskey.
1 quart brandy.
9 gallons alcohol.
1 boat bucket.
1 pike.
3 small cedar boards.
3 Remington rifles.
1 shot gun.
245 Remington rifle cartridges.
2 cooking stoves.
12 pots.
12 pans.
12 spoons.
1 axe. 1 saw.
10 men harness.
2 rubber bottles lime juice.
1 rubber bottle for water.
8 galls. water in kettles.
15 1/16 5/8 lbs. tea.
2 1/2 lbs. coffee.
9 lbs. ham.
8 lbs. tongue.
4 3/4 pigs' feet.
5 Liebig extract.
1 compass.
1 pocket chronometer.
9 cans (405 lbs.) pemmican.

Boat box, viz.:

2 snow knives.
3 candles.
1 paper tacks.
40 cartridges.
1 flint steel, tinder, and matches.
2 fish lines.
4 hanks heavy twine.
2 balls cotton twine.
1 palm.
2 roping needles.
1 lb. salt.
10 lbs. sheet lead.
1 ball marline.
1 file.
1 hatchet.
1 lb. tallow.
1 lb. nails.

FIRST CUTTER.

7 1/2 lbs. ham.
9 lbs. tongue.
4 3/4 lbs. pigs' feet.
7 1/2 lbs. Liebig extract.
3 1/4 lbs. coffee.
10 1/16 lbs. sugar
20 3/4 lbs. tea.
1 box chronometer (1630).
1 pocket chronometer.
1 pocket compass.
1 sextant.
1 artificial horizon.
1 box medicines.
1 boat cover.
9 single sleeping-bags.
1 single sleeping-coat.
1 treble sleeping-bag.
1 rubber sheet.
2 sled covers.
2 rubber bottles lime juice.
2 quarts brandy.
1 quart whiskey.
4 tin cases books.
1 tin chart case.
2 opera glasses.
2 cooking stoves.
4 dippers.
1 bucket.
15 mess pans.
13 mess cups.
13 mess spoons.
8 rubber bottles.
2 Remington rifles.
297 cartridges.
3 Winchester rifles.
226 Winchester cartridges.
1 ensign.
2 tins specimens.
9 galls. alcohol.
12 cans (540 lbs.) pemmican.
1 mast.
1 yard.
1 sail.
1 rudder.
1 tiller.
1 yoke.
6 oars.
2 boat-hooks.
1 brad-awl case.
1 boat sled.
1 hammock.
3 bags of clothes.
11 men harness.
2 tents.
8 tent poles.
2 demijohns alcohol.

1 pickaxe.
1 shovel.
1 bundle sled lashings.
15 fathoms small line.
1 instrument box.
matches.
1 dog.
Boat box, viz.:
1 marlin-spike.
1 pricker.
1 hatchet.
1 hammer.
1 pot grease.
1 bag nails.
1 bag tacks.
1 snow knife.
3 fishing lines.
½ doz. fish-hooks.
4 sail needles.
1 piece sheet lead.
1 wrench.
3 candles.
1 spirit lamp.
1 flint and steel.
2 balls cotton twine.
4 hanks hemp twine.
1 palm.
10 fths. 3″ hemp.
1 lead line.
3 cedar boards.

The people are distributed as follows: —

FIRST CUTTER.

Lieutenant De Long,
Dr. Ambler,
Mr. Collins,
Nindemann,
Lee,
Ericksen,
Kaack,
Noros,
Görtz,
Dressler,
Iversen,
Alexey,
Boyd.

SECOND CUTTER.

Lieutenant Chipp,
Mr. Dunbar,
Sweetman,
Kuehne,
Warren,
Sharvell,
Starr,
Manson,
Ah Sam,
Johnson.

WHALEBOAT.

Mr. Melville,
Master Danenhower,
Mr. Newcomb,
Cole,
Wilson,
Tong Sing,
Aneguin,
Leach,
Lauterbach,
Bartlett.

All this work kept us busy. During the forenoon Boyd called my attention to land to the southwest, but after looking carefully with a glass I was not sure about it. At 2 P. M., however, it showed plainly enough, and extending between S. and W. (magnetic).

There was no doubt in my mind that it was the Island of *New Siberia*, but at 4 P. M. I got a time sight, and that settled it. Assuming a latitude of 75° 30′ N., I got 147° 50′ E., and that ran through the western portion of the island. The ice has packed very heavily around us, and we are drifting west very rapidly. Close to the land is a lane of water, which will be all we want if we can reach it.

I called Chipp and Melville into my tent this afternoon, and gave them information in regard to my plans for the future and such general verbal directions as to their boats, food, and other things as were advisable. Ordering them in all cases to keep close to me, I think, covers any other point; for if I am always at hand to refer to, they need no orders in advance, and if unfortunately we get separated things must be left to their judgment. In this latter case they will, without delay, proceed to the Lena, and not wait for me or anybody short of a Russian settlement large enough to feed and shelter them.

The wind is moderating, and the barometer rising rapidly at six P. M., and I hope for good weather tomorrow, when, with God's blessing, I expect to start on our journey afloat. Kasmatka too clumsy and big, — shot him.

Being so near the end of this book I will keep the remainder of my log in a second one.

Provisions in First Cutter, August 20th.

17½ lbs. ham.	3¼ lbs. coffee.
9 lbs. tongue.	10$\frac{1}{16}$ lbs. sugar.
4¾ lbs. pigs' feet.	20¾ lbs. tea.
7½ lbs. Liebig's extract.	630 lbs. pemmican.

Issue for One Meal for Thirteen Men.

4⅓ oz. tea.	Pemmican,	breakfast,	4⅞ lbs.
8⅔ oz. sugar.		supper,	4⅞ lbs.
8⅔ oz. coffee.		dinner,	6½ lbs.
3¼ tablespoonfuls Liebig's extract.			16¼ lbs.

Lime juice 1 oz.

STARBOARD WATCH.	PORT WATCH.
Nindemann,	Ericksen,
Görtz,	Lee,
Alexey,	Dressler,
Iversen,	Boyd,
Kaack.	Noros.

August 21*st*, *Sunday*. — Called all hands at five. Breakfasted at six. Last night Nindemann got soundings in eight fathoms, — sand and mud. Rapid drift W. This morning the soundings are the same, but there is no drift. Fresh E. wind, but still much more moderate than yesterday. Temperature 25°.

So much ice has closed in around us that it looked as if we had never been afloat at all, and though the wind has moderated, we cannot resume our journey. There are no leads for boating, and no floes for sledding, and our surroundings seem as icy as ever. However, I know that a change of wind will scatter everything again, and I most hope to make up for these two lost days, though, in my human judgment, I deplore the loss of those three hours yesterday as a heavy blow.

Read divine service in my tent at ten A. M. At noon got a meridian altitude. Latitude 75° 40′, and making yesterday's sight with this latitude, I get 147° 31′ 30″ for the longitude. This puts us eighteen miles north of

the coast, and about the same distance from the West Cape, — which we would have to round to get into the channel separating New Siberia from Faddejew Island. During the day such little things about the boats as were left undone yesterday were completed, and I think we are as ready to go to sea as we can be. We are now living according to our boat organization, serving out provisions from our boats. Piped down at nine. Wind N. E. Barometer 30.17 at 42°.

August 22d, Monday. — The situation remains unchanged, and though the wind is now N. N. E., and the barometer 30.18 at 32°, seemingly at a stand, the ice as yet shows no sign of slacking. Clear, bright, and beautiful weather. The land shows out plainly between S. 30° E., and N. 85° W. (magnetic) bearings, and I think we have gone something to the southward and something to the eastward. Temperature 25°.

My birthday — thirty-seven years old. My last was remarkable by my narrow escape from a bear, and I trust this will be remarkable as dating an escape from the ice.

Toward noon the wind backed to N. and the barometer fell to 30.10. We have already commenced to drift again, apparently before the wind. But my latitude at noon was 75° 40′, only a few seconds south of yesterday, and I think it likely we are moving east. Hoping for the wind to go to N. W. and loosen this pack, we can but wait.

And wait we did, during the long day, without a change in our favor. The wind hung at N., and blew a moderate gale, but we are so closely pressed down on the coast of New Siberia Island that our drift is but slight. Still I think we are moving east, and if the wind will only get some westing in it during the night,

we may find plenty of water in the morning. The barometer has fallen to 30″ at 43° by eight P. M., and the scud seems flying from the northwest.

August 23*d*, *Tuesday.* — When I awoke this morning it was to hear the wind howling around us, and the sleet driving against the side of our tent. The wind was N. N. E. The barometer was 20.78 at 35°, and the temperature 29°. We are apparently in for another lost day. No one seems to mind our having no bread. Our rations now are exceedingly simple. The coffee being gone we have tea at all meals.

Breakfast: Beef extract, tea, pemmican.

Dinner: Tea, pemmican.

Supper: Beef extract, tea, pemmican.

Pemmican per day one and a fourth pounds; tea, one half ounce; Liebig's extract, one half ounce.

But we seriously feel the absence of tobacco. Those who have a little piece left use it rarely and sparingly, and the lucky ones are few in number. The rest go without, or smoke coffee-grounds, or coffee-grounds and tea-leaves mixed. The smoking of coffee-grounds gives our tent the odor of a grocery where coffee is being roasted. I expect I shall come to it to-morrow, for my last pipeful of tobacco is to be smoked after supper to-night.

Soundings in forty-four feet, no drift, mud and sand. No change in the weather up to seven P. M., except that the barometer seemed to stand at 29.70 at 40°, and the wind moderate; but the ice remains jammed as hard against us as ever. Wind N. E. Temperature 28° Fahrenheit. Just before piping down Nindemann shot a small seal, which will make a welcome addition to our next breakfast.

August 24*th*, *Wednesday.* — Called all hands at five.

Breakfasted at six. Light E. S. E. breeze. Temperature 24°. Soundings eight and three fourths fathoms. Slight drift N. W. To-day, at dinner we in No. 1 tent tried, our pemmican fried in its own grease, and as a change it was excellent. I have been much amused all the morning at hearing men in No. 6 tent talking about good things to eat, and the conclusion reached about the excellence of Boston baked beans and brown bread. The extent of my longings thus far is for fried oysters, and recollections of their delicious taste will come up. The day passed in dreary stupidity. The wind grew light and backed to N., while the barometer fell to 29.53 at 40°. The ice commenced to slack up a bit without opening any way of escape. Mr. Collins shot a seal, which gave us about three fourths pounds each fresh meat for supper. Temperature 22°.

August 25th, Thursday. — Called all hands at five. Breakfasted at six. Barometer 29.36 at 36°. Temperature 24°. Light N. air. Otherwise the situation is the same, discouraging, disheartening, consuming provisions without doing work; owing to our having cut up our sleds, we are not making inroads on our alcohol for fuel, and there is a slight comfort in that, but provisions are diminishing all the same, whether cooked with alcohol or wood. During the afternoon a seal was brought in — twenty-two pounds — which gave us a good supper.

The wind at seven P. M. was very light and westerly, sometimes N., sometimes N. W.; and there was a very little movement in the ice toward the east. Temperature 27° in the sun, fell to 24° in the shade. If the change of the moon has had anything to do with the weather, the new moon at six this morning ought to have made a difference; but except that the ice is slacking off a little from our floe piece, there is no

more chance of resuming our voyage than there was yesterday.

August 26th, Friday. — Called all hands at five. Breakfasted at six. Calm. Ice tightly packed still. Temperature 24° Used the last of our sugar at breakfast. This may seem like a loss, but the announcement received no attention whatever. During the forenoon Bartlett shot a small seal, which we shall add to our usual pemmican ration. Got a time sight: 147° 38′ 45″ E.

Since the evening of the 22d I confess I have been perfectly miserable for want of a smoke. This afternoon, after dinner, Ericksen came to me, saying he had noticed me going around without smoking, and he tendered me a small packet of the precious article, tobacco. I declined more than a pipeful, but he insisted upon my taking more, saying they had enough for some days in No. 6 tent. I sought out the doctor and Nindemann, and made them as happy as myself. And now, "Richard is himself again." Mr. Dunbar shot and secured a seal, so we are in for a good supper.

And so another weary day dragged along. By seven P. M. a light N. W. wind had freshened somewhat, and while the ice seemed slacking, much water sky showed to the southward and eastward, and the temperature, which had got as high as 28° in the sun, now was at 26.5°. Still no chance to move, and so far as human judgment can perceive, seven days have been utterly lost by three hours' delay a week ago.

August 27th, Saturday. — Called all hands at five. Breakfasted at six. A clear, bright morning, but tightly packed ice. Light N. air. Temperature 24°. At noon I got latitude, 75° 37′ 28″, showing two and a half miles southing since the 22d, and thus another day passed.

A freshening N. W. breeze. Temperature 26° at six P. M. Land showed between south and west. Evidently we are more to the eastward than before. The bearings of the extreme of land showing are 58° E. and N. 71° W., both magnetic. Toward eight P. M. lanes of water could be seen between us and the land, and running parallel with the coast, but we were separated from them by a mass of confused hummocks and water gaps, over which it is simply impossible for us to drag our boats and provisions.

August 28th, Sunday. — Called all hands at five. Breakfasted at 6.30. Wet fuel caused the delay. Light snow falling. Wind N. W. Temperature 27°. Seemingly more to the eastward in the brief glimpse we get of the land. Divine service at ten. The ice seemed to be loose, and here and there swirling around. Next the land quite a lead showed, and numerous unconnected ponds formed below us and it. Hope for a chance after all. At eleven Mr. Dunbar came to me and said he could see the open water to the eastward. Going to the top of the nearest hummock, I saw what I took to be the open sea; but shortly after, Mr. Dunbar came to my tent and informed me that it was land. Land it was, sure enough, and bearing N. 70° E. (magnetic), while the extreme point of our old land bore south (magnetic). Apparently, then, we are *between* the two islands, — Faddejew and New Siberia, — and our being jammed is accounted for. In one respect we are better off, because nearer the Lena River; but in another, I do not like it, because no one can tell how long we may be caught.

And thus another weary day passed away. No seals to amount to anything, and as shy as if they had been hunted regularly. Our drift along the land, which was

at one time quite rapid, slacked up by seven P. M., and the wind veered to N. Numerous lanes of water showed, but none which we could use. Temperature 25°. The wood being all burned, we to-night had to commence again on alcohol to cook with.

Being miserable all day without something to smoke, I had tea-leaves to-night, and, to my pleasant surprise, got considerable comfort. Soundings in forty-four feet, mud and sand. Drifting south. At eight P. M. the wind had veered to N. N. E.

August 29th, Monday. — I have concluded that there is very little use in calling all hands at five A. M. day after day, when we have no chance to move along — and God knows the hours of waiting pass drearily enough without unnecessarily lengthening the days. Accordingly, all hands this morning slept on until 6.30, and when up we found that the ice seemed more tightly closed than ever. A mist and fog prevented us from seeing the land, or anything more than a mile, but within that radius no water could be seen. Temperature 20.5°, and light N. E. air. Soundings in forty-four feet; slight drift to leeward.

At twelve Mr. Chipp came to my tent and informed me of a lead making south along the west side of our floe. At once finished dinner, broke camp, and carried our provisions across the floe and dragged our boats. At one P. M. got under way, and proceeded south till 1.30, when we were brought up. At three resumed our journey, making between east and southeast until six, when we made south to south southeast until 8.30, then, seeing nothing promising, I hauled alongside a floe, unloaded, and hauled out. At 1.30 we had soundings in six fathoms, at four in four fathoms, and at 8.30 five fathoms. The ice was in one great swirl and flurry,

and we narrowly escaped being crushed. Very rapid drift before the wind. I hope we are through the neck of the strait, and may go on to-morrow.

August 30th, Tuesday. — Called all hands at four A. M. Broke camp and loaded the boats. Land in sight, extreme point bearing S. 46° W. (magnetic). Now what point is this? Nothing can be seen of land more southerly than this, and we can hardly have come so far south during the night as to bring the southern end of Faddejew Island on this bearing. Soundings in five fathoms; rapid drift southward. The ice was swirling around us at a great rate, and we were sweeping by the land (probably five miles distant) at a good speed. To launch and load boats in such a hell-gate was a ticklish thing, but I knew it would look less terrible when we were once among the ice-blocks and went ahead.

At 4.50 we were under way. Got breakfast in the boats at 5.50. Weather bright and pleasant. Light, variable air. Making south course in streams of drift ice. Barometer 30.32 at 26°. Temperature 20°. The bright sun was very warming and comfortable, and, whilst we had it, we forgot the low temperature. Soon, however, a fog spread over us and nearly hid the sun, and at once the weather seemed raw and wretched. At eleven A. M. the land was seen by me bearing west through the streams of ice in which we were steering south, and I at once decided to head for it. Our water spaces were growing larger and larger, and apparently we were at the edge of the ice at last, and at the open sea. I selected the best looking floe piece I could see, and ran alongside of it for five minutes to replenish the snow supply. Sounded in four fathoms, and headed immediately thereafter for the cape or headland seen on a west bearing. Until I can get sights, or have some other

undoubted proof of the correctness of my surmises, I can only think that the cape was Cape Peszowij. At two P. M. passed the last line of ice between us and the land, and sounded in fourteen feet water one and a half miles from the land. At 3.10 made the cape, but, to my surprise, upon getting to within fifty yards of the beach, my boat struck in the mud. Compelled to seek another place, I headed across the bay for the spot marked as Faddejew Hut; but seeing a nice looking place for a landing, at six P. M. I stood in towards it. To my pleased eye there was presented a grassy or mossy slope for a camp, whole trees of drift-wood, and small snow piles which I felt confident did not contain salt; but alas! we struck the mud a hundred yards from the beach, and could do nothing. I lightened the whaleboat of all but two men and Melville, and sent her in to try and make a landing, then act as a ferry, but she struck fifty yards from the beach. We pulled away again, and, anticipating a night in the boats, we commenced to cook supper.

But I then perceived further south a piece of beach which showed gravel and not mud, and I ordered Melville in to try it, relieving him of his men as before. To my great satisfaction he succeeded, and then, acting as a ferry back, he assisted us, and by 6.45 P. M. all of us were on good firm ground for the first time in two years. My relief was great after the strain of the past ten days, and the mental tension caused by the last two days' work. To get moss and grass under my feet again warmed me, and my freezing feet got back their usual temperature. We moved up on the mossy level back from the beach and camped, and our remaining dog, Snoozer, tore around in glee, chasing lemmings, whose holes were abundant, while we human beings

more seriously sought for eatable game. Deer droppings were found quite fresh, pieces of deer horn, tracks of a hare, flocks of black geese, etc., and whole trees of Norway pine. Ponds of water were found on the level plain where we camped, and we promptly got rid of the salt snow water and laid in a fresh supply.

Our last ration of lime juice was issued this morning.

After supper hunters went out. Light S. E. breeze. At eight P. M., barometer 30.30 at 30°; temperature 24°. Increased the ration of pemmican to one and a half pounds per diem, — three quarters at dinner, three eighths at breakfast, three eighths at supper.

CHAPTER XVI.

THE NEW SIBERIAN ISLANDS.

31 *August* — 11 *September*, 1881.

Deer Tracks. — A Deserted Hut. — Coasting along the Island. — Rough Water. — Across the Strait. — Separation of the Boats. — Terrible Anxiety. — Reappearance of the Second Cutter. — Letter to Mr. Chipp. — The Hardest Morning's Work. — The Sand Bank. — Landing on Kotelnoi. — A Retrospect. — Signs of Life on the Island. — Hut. — Explorations. — Candle-Snuffer Hills. — Under Way again. — Semenovski Island. — Deer and Ptarmigan. — Elephant's Tusk. — Record for Deposit.

August 31*st*, *Wednesday*. — Called all hands at five. Light E. air. Temperature 22°, but the air seemed as mild and pleasant as it did when the temperature was above 30°. The hunters brought in but three ducks, and a small number of sanderlings. Deer tracks were found to be plentiful and fresh, and numerous pieces of horn — one piece with the velvet still on it.

Mr. Sweetman and the steward found, about one and a half miles below to the southward, a hut tumbling to decay on the right bank of a small river. This is doubtless the "Faddejew Hut," marked on the chart, and establishes well our position.

The doctor this morning saw a ptarmigan. Breakfasted at six. Turned to at 6.30, and carried everything down to the beach. Launched and loaded boats in the inverse order of last evening. Under way at 7.20. At eight passed Faddejew Hut, and continued to south-

ward. At 11.20 attempted to land for dinner, but took the ground three hundred yards from beach. Proceeded under sail, while dinner was on hand. At three rounded South Cape. Saw several piles of timber, or old huts. At 5.30 attempted to land for supper and camp, but took ground five hundred yards from beach. Whaleboat lightened could not get nearer than three hundred yards. Concluded to go on under sail all night. Barometer 30.42 at 29°. Temperature of air at three P. M. 28°, of water 33°. Tidal action two feet five inches. Ducks, owls, snipe, seals.

Accordingly we proceeded, and believing myself to be clear of the sand bank, I shaped a course west southwest, which giving us the wind nearly aft, was an easy one to make. The breeze freshened, and we went along at a fair rate until ten P. M., when, to my surprise, we saw ice ahead and on both bows, and all at once we stuck fast in the mud. We had encountered an arm of this sand bank, and the ice was small pieces grounded at its edge. From this time until midnight we were fully occupied in tacking and pulling to keep in water deep enough to float us. The night was very dark, and altogether our surroundings were wretched; two feet of water seemed to be all we could find, and then eight feet, suddenly changing to two feet again. We had no anchors, and nothing except pemmican heavy enough to use instead. As our pemmican tins are all "holey," the use would involve wet and condemned food. I tried to make an anchor out of a pickaxe and tent-pole, but it would not bite. I next tried to hold my boat by driving tent-poles in the mud, but she broke away. Sleep was impossible for anybody, and we waited in wretched discomfort for the morning's light.

September 1st, Thursday. — At two A. M. sufficient

light for going ahead and seeing our way. Managed to get the first cutter and whaleboat around the edge of the bank by pulling and tacking, but we got so far ahead of the second cutter that she was lost to view. At six A. M. I ran alongside a grounded floeberg (in six feet of water), and while we were waiting for the second cutter got breakfast.

At 7.10 Chipp hove in sight, and I got under way again. Before this, however, we had pitched tents for eating, and were nearly drowned out by the sea breaking over as the tide rose. Stood along good full with an E. S. E. wind. Barometer 30.42 at 41°. Temperature I do not know. On the port tack, and kept a man in the bows sounding with a tent-pole. Suddenly shoaled to three feet, and before I could get around, stuck fast. Whaleboat tried to drag me off, but got me on a reef, and we nearly filled the boat with water. Got off and proceeded with freshening wind and deepening water, on south southwest course until noon, southwest after eight, and at three, west southwest. Increased water to forty-four feet, at twelve; five fathoms, at two; five and a half, at three; eight and a half, at four; nine and a half, at five; when having lost sight of second cutter, ran alongside floe to wait for her. We were making excellent time. The first cutter and whaleboat going at times five to six knots an hour. The sea was increasing somewhat, and unless we kept our boats going ahead full speed, the water would have come over our rails in too large quantities for our control; as it was, a sea would come in occasionally, wetting us to the skin and forcing us to bail, as well as pump constantly. I almost welcomed some little streams of drift ice, for they gave smoother water under their lee, though presenting nothing large enough to hang on to

while waiting. At four P. M. I saw a good-sized piece, and ran both boats up to it. I could see nothing of the second cutter, but I did see enough to make me anxious. The ice was coming in on us in all directions, much as it did on August 20th, and I feared we might again be caught. There was no ice around us large enough or safe enough to camp on, and nothing remained but to go on. I had full confidence in Mr. Chipp's ability to take care of the second cutter, and I had no doubt he would soon overtake and rejoin us. At five, seeing a good large floe piece, I ran up to it, as before stated, got supper, and then camped and turned in.

Being successful in keeping clear of the sand bank during the day, we did not see the island marked in the middle of the southern edge; in fact, I had given up all idea of making for it, and was now heading so as to keep clear of the sand bank, and make the south end of Kotelnoi Island. The distance was about seventy miles from the south cape of Faddejew Island, and though I could not tell how far we had run last night before bringing up against the reef, I estimated roughly that by five P. M. we had run fifty miles of that seventy. The land was not yet in sight, though low-lying clouds from west southwest along to the right indicated its presence. Everybody was wet and cold, and we crawled into our bags with great content. Temperature 26°. Wind increasing and promising a gale.

September 2d, Friday. — The wind remained at E. S. E., and was blowing a gale with snow, at five A. M., when all hands were called. Temperature 29°, at seven. Nothing has been seen of the second cutter during the night. Soundings ten and a half fathoms. Rapid drift W. N. W. But very little sleep was ob-

tained by anybody during the night, and we devoted the day to making up our deficiencies of two nights. The gale tore around us unheeded, and were it not for the second cutter's separation from us, it would have been comfort to me. But anxiety and care seem to be my steady companions now, and they are doubled in intensity.

During the afternoon Nindemann saw the land bearing from west to northwest, and he thinks seven miles distant. The snow let up for a time, and occasional lulls were noticeable in the wind. At six P. M. the temperature was 29°. Thick snow again falling. Soundings four and a half fathoms water. Drift not so rapid. Lest Mr. Chipp and his party should be within a short distance unseen and unseeing, I had a black flag prepared and hoisted at our mast-head as a signal.

Piped down at nine P. M. So much ice has closed around us that it is hard to believe we came here through open water. No longer is the ice navigable for our boats, and a shift of wind alone can send it streaming away. To the westward it is held by Kotelnoi Island, and to the northward by the sand bank, and all the movement that is now taking place is simply the massing together.

September 3d, Saturday. — Called all hands at six. Strong breeze S. E., though not a gale by any means. Nothing seen of the second cutter or her people. Temperature 29°. Soundings twenty-two feet water. Water in sight to north and northwest (probably the water to edge of sand bank), and strong appearance of land west to west northwest.

Up to noon the wind moderated considerably, and the sun made several efforts to struggle through the clouds. I was in strong hopes that the gale was over,

and that a favorable change of wind would occur. But after dinner the barometer commenced to fall again, and the wind increased. By four P. M. a gale was again blowing. The barometer had fallen to 29.90 at 32°, and the sky was one dull, leaden gray. The land showed quite plainly. Seemingly mountains back of a coast line of the same height as that of Faddejew Island, viz.: fifty to ninety feet. How far it is off I can only guess, — it may be ten miles. What with my anxiety about the second cutter, and the uncertainty of our own future, I am nearly worn out, and the resumption or continuance of this southeast gale, which more closely packs the ice around us than ever, adds hour by hour to my care.

But thank God relief came sooner than I expected. At 4.45 P. M., Aneguin, who was on the lookout, saw a sail and called us out. There the second cutter was, sure enough, about half a mile off, skirting the edge of the ice to northward, where it had apparently grounded against the sand bank. When she arrived abreast of us, she came to alongside the ice and hoisted a black flag at her mast-head.

At 5.50 Mr. Chipp and Kuehne came over the ice to us, and we had them to supper. They lost sight of us at three P. M. on Thursday, and soon after nearly filled with water. Hauled out, etc. For further details, Chipp will give me a written memorandum when we get ashore.

I gave him the following letter : —

SATURDAY, *September* 3, 1881.

MY DEAR SIR, — I am very glad to see you close to us again, for I have been very anxious for forty-eight hours. When we commenced dropping you astern on Thursday, the sea was running so high that I had to carry on sail to keep

the water out of my boat until I could find a floe piece large enough to hold on by until you came up.

While waiting, we were beset as you see. If your boat and people are in a position of security, wait where you are until the end of this gale or a shift of wind enables us to join. My intention is to make at the first opportunity for the south cape of Kotelnoi, or a convenient landing-place near it on the southeast coast, and as soon as water is laid in and weather favors to go as far as Barkin (Lena Delta) via Stolbovoi Island. The distance from south cape of Kotelnoi Island to Stolbovoi is sixty-five miles southwest by west, and from Stolbovoi to Barkin one hundred and twelve miles west southwest (see your chart). You will be prepared, after falling in with me, to send one man to the first cutter and one man to the whaleboat, for your load must be reduced so that you can keep up.

Make every effort to keep within sight, *and, if possible, within hail* at all times hereafter; but if by any mischance we should become separated again, make the best of your way to the Lena River, and try to reach some settlement large enough to feed and shelter your men before thinking about waiting for me. I do not think the land is more than ten miles off. We came alongside of this floe in ten and a half fathoms water and have drifted into three and a half fathoms.

I intend hereafter to keep a small black flag at the masthead of the first cutter whenever the sail is not set.

Very respectfully,

GEO. W. DE LONG,

Lieut. U. S. Navy, Commanding Arctic Expedition.

Lieut. C. W. Chipp, Executive Officer, Commanding Second Cutter.

To-day, at dinner, the whaleboat and first cutter fairly divided twelve ducks (seven to me, five to Melville) which had been shot, — two at Faddejew Island, and ten which were shot on the 1st inst. I knew the second cutter had one duck and three sanderlings, and I wished to keep our stock until we came together and

could make a fair division; but the birds had been washing around in the bottom of the boat, and I feared they would spoil. Hence a good dinner was made of them, and half a pound of pemmican per man.

Chipp seemingly has run about thirty miles since ten this morning along the edge of the sand bank, and where he now is (about one mile north of us) he is in four feet of water, and can see the edge of the sand bank as far as eye can reach. From our camp we can see the land from west to northwest, and I am strongly in hopes that the water extends inside of the grounded ice even to the land. We are in twenty feet of water and not drifting, and I have arranged with Chipp a signal for to-morrow morning in case I decide to cross the ice and float again in the shoal water, in which case I shall use his men to help. Fresh southeast gale still blowing.

September 4th, Sunday. — Called all hands at five. Breakfasted at six. Strong S. E. wind. Temperature 27°. At 6.30 started ahead Nindemann, Bartlett, Iversen, Lauterbach, and Kaack to cut a road good for boats, and then sent after them everybody with a bundle of some kind (sleeping-bag, box, or package) to cross to Chipp's camp. Lee and I remained alone behind. At 8.30 started with the boats over the ice, but, owing to very rough road and hard dragging did not reach Chipp's tent until one P. M. This has been, without exception, the hardest morning's work we have yet had, for as our boat sleds are no longer in commission, all dragging has to be done on the keel runners, and there is no protection for the bilges of the boats. The ice is massed in a very rough and confused pack, and sharp edges are innumerable. Long strips are peeled off the keel runners as we drag along, and the boats themselves

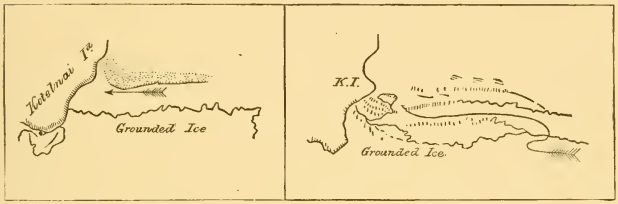
get many a scratch. By placing the mast athwart-ship the rail, and lashing down to a thwart, sufficient leverage is obtained to keep the boat upright without much difficulty; but it is the sudden drop from a lump into a hollow, or the slide and sudden bring-up, that starts the seams and does the damage. Holes between grounded floes are common, and occasionally a man breaks through and falls in, and has to be run along to get dry clothes. So little food remains that I did not dare take it out of the boats and carry it by hand, lest a man falling in should lose a can of pemmican, which means a day's food for all hands, and consequently the usual heavy weights of the boats were increased. However, at one P. M. the water was reached, and we got dinner ready with all dispatch, sitting down at two.

The water is here six feet deep, and the shoal or sand bank lies north of us, and stretching along from east to west about two hundred yards distant. About one hundred and fifty yards from the grounded heavy (*i. e.* six feet thick) ice, there is a long string of smaller grounded pieces, and fifty yards beyond the hard sand bank. This makes two bars, as it were, and offers two channels which seem to run to the west for a couple of miles, and then sweep around somewhere to the right.

In order to avoid the grounding of the first cutter (now carrying fourteen men, Ah Sam being our addition from the second cutter, — Manson went to the whaleboat, now carrying eleven), I ordered Chipp to go ahead, Melville to follow, and I brought up the rear. At three P. M. we started (the ice having considerately broken under me, and sent me overboard up to my shoulders a minute before), and flew down the deep channel W. before a strong S. E. wind, with snow

squalls. After running two or three miles Chipp suddenly took in sail, and coming near me reported no passage ahead. Turned about and made the two other boats tow me in line ahead for about three hundred yards to windward, and then went through an opening into the shallow channel, and ran along to the westward, as before, in about four feet of water. To my surprise, the ice seemed packed in close to the land in all directions, and I began to think we were in for another night in the boats, or a hazardous camp on small grounded ice lumps. Water enough was on our N. E. hand, but that led towards the reef or sand bank, and was, therefore, not desirable. By hugging the grounded lumps close on our port hand, we worked ahead rapidly, so much sea having got up that I ran away ahead of the other boats, and kept the lead thus obtained, though the risk of grounding was thereby increased. At one time we were actually running N. E., at another N. (being forced to bring nearer the wind on the starboard tack by the long streams of grounded ice making out from the land), but finally, at five P. M. I thought I had got clear of the last piece and could run N. W. To my surprise I had then on the port hand, or S. to S. W., a stream of grounded ice, and right ahead, or N. W., a low sand bank with one end seemingly raised six or eight feet above the sea. Naturally avoiding the sand bank, I attempted to hug the grounded ice, and suddenly shoaled my water too rapidly for any doubt as to our soon sticking fast. Rounded to at once, and made fast to a grounded floe piece. When the whaleboat came up I unloaded her people (except four) on an ice lump, and sent her in towards the raised sand bank to sound, and the second cutter was ordered to follow her slowly and carefully.

Watching them closely, I saw they had no lack of water, and I took in my boat the seven belonging to the whaleboat, and drifted down toward them. I say drifted, for we were so deep we dared not pole, and still less did I dare to sail. Soon I met the whaleboat coming back, and Melville reported plenty of water right up to the point. Gave him his people, and went on. The second cutter had rounded the point and came to against the beach and I ran in alongside her, and at 6.30 we all landed on the beach or sand bank, whatever it is, pitched camp, unloaded, and hauled up our boats.



What I thought I was doing. What I was doing.

Now where are we? Snow squalls, fog, and thick weather generally prevented my seeing anything except that we had landed on a sandy spot, with lots of drift-wood, but whether an island, or a low beach extending from Kotelnoi Island, I knew not. Dimly through the snow the loom of mountains could be seen to the westward, but whether distant five miles or fifty I could not say. Everybody was wet and cold, — running before the sea, with loaded boats, being no dry operation, — and I was only too thankful to get a place for my people where we were at least secure, to care much for its geographical peculiarities.

I had been in my wet clothes since falling overboard, and they clung unpleasantly to me, chilling me to the

bone in spite of the ration of brandy which the doctor had given me when I was hauled out, and I was as anxious as anybody to get a fire made to stand in front of to dry by. Chipp said he saw thousands of ducks fly around a point as he came in, but though I at once sent Mr. Newcomb away with his shot-gun, he, at the end of an hour, brought back only one gull, and six miserable little sandpipers, about the size of a fly. While under way, he shot and secured two ducks, and I was anxious for more. The announcement was made that deer droppings were here, and in anticipation of what the barren spot might give us to-morrow, we sat down to a pint of beef-tea, six ounces of pemmican, and one pint of tea without sugar. By this time, we had a roaring fire going, however, and though choked by smoke and scorched by sparks, we stood around it and steamed ourselves into partial dryness. Some of the wood was marked with axe cuts and one piece was cut for a log-house.

The S. E. gale blew harder than ever, and dark night shut in at nine o'clock. Standing by the fire, with my congregation holding wet stockings and other gear to dry meanwhile, I read divine service at 8.30. Though it was the first Sunday in the month and the Articles of War were in order, I postponed them to a more favorable occasion. When anybody felt like it, he crawled into bed.

September 5th, Monday. — Called all hands at six A. M. Breakfasted at seven. More of a gale than ever, with blinding snow-storm. Wind E. S. E. Barometer 29.76 at 32°. Temperature 28.5°. No chance to send out anybody in quest of game, so we must eat our pemmican and wait for something else. I am more and more thankful that I have even a sand spit to live

on, though I do not know where I am. Nothing can be seen through the thick snow but a dim outline of land to northwest and west, — but near or far is a doubtful point yet.

Mr. Collins evidently had a bedfellow last night, a lemming, for when he went out of the tent this morning, one of these little creatures jumped out of the hood of his fur coat and burrowed his way into the sand like a flash. Johnson says he saw a moccasin track in the sand, which was made where none of us had yet been, and it was quite fresh ; and some wood around us bears fresh marks of axes. Can this place have been visited lately ?

A fossil bone was picked up by the doctor last night. Finding numerous ponds along this sand spit, we, for a moment, supposed that we might find good water, but investigation proved that it was all very salt. The snow-fall this morning gives us a fresher supply, though in drifting over the sand before massing in banks, it collects an appreciable amount of salt.

Mr. Dunbar looks quite ill, and I am afraid has suffered more in the second cutter than he will admit. When we parted company with them, they had their hands full in bailing their boat, and when they ran alongside an ice floe and prepared to haul out, Chipp had to be passed out by hand, he was so cramped from sitting in the cold water. Chipp at once served out two ounces of brandy to each one, and Dunbar immediately threw his up and fainted. I have noticed that all the second cutter's people looked tired and strained, and several of them had swollen faces. When I get Chipp's account in detail, I can set all these things down.

Anniversaries come around with queer comparisons.

Two years ago we were beset in the ship, near Herald Island, and to-day finds us on a sand bank, — which of the two situations is the preferable? To go back with the two years' experience to come, which we know we have had, or to go on with everything unknown before us? I think I will pronounce in favor of the unknown as less gloomy than the known. Toward noon the snow ceased, the wind moderated, and the sun made one or two efforts to shine through the clouds. Mr. Newcomb went out with his gun, but got only two ducks. He brought back, however, the antlers and skull of a deer, pronounced by Alexey to belong to a young deer. Perhaps wolves ate him.

After dinner I sent all the guns out but one. A seal came close in shore, but before our gun had been got he was too far off. Ducks made their appearance, but out of range, had our shot-gun been in camp. Little sand-pipers waded around the shore, and large purple jelly-fish were seen. At two P. M. barometer at a stand, almost calm. Temperature 29°. During the afternoon, as our stragglers came in, various accounts were received of what had been seen. Hundreds of cords of drift-wood to the southeast of us, and curiously enough, lying in lines northwest and southeast. Deer antlers shed naturally. Places under six inches of water, etc. Curious stones were picked up on the beach, among them ammonites. Lee saw the ruin of a hut about one mile southeast of us.

It may seem curious to some people why I do not go around more myself when ashore, instead of taking accounts of others; but the fact is, my feet are swollen with cold, and my toes are broken out with chilblains, and I am unable to get around very much. In the boat I am obliged, like everybody else, to sit or

stand quietly all the time, and my hands and feet are in bad condition from the cold in consequence.

At 4.30 P. M. Chipp and the doctor returned. They had walked about five miles out and back, and though seeing deer droppings and antlers, found no game whatever. They found this sand spit to be the low beach extending out from the main land, and we are, beyond doubt, on Kotelnoi Island. This projecting piece of land has a creek or river on its northwest face which could be traced in toward the high hills (sixty feet high), and we are seemingly at its broad mouth. From this fact, and the immense amount of drift-wood seen by Lee, I am inclined to think we are at the mouth of the Zareva River, though I hope we may prove to be more to the southward, and nearer the southern rivers about Barencap.

Chipp and the doctor saw several ruined huts and

Hut on Kotelnoi Island.

much drift-wood. In one place the soil was composed of rotting wood, being quite black. By five P. M. everybody had come in, but no game was brought. The sky had cleared somewhat before a light N. W. air, and we could see something of our surroundings. Kuehne, who had gone around our sand bank to the southward, reported that he had found the ruins of half a dozen huts together, and around them piles of deer horns; and this showed conclusively that some people had been here who could hunt and eat. Besides, Ninde-

mann brought in some fashioned pieces of wood, and a hoop from a fish keg. I am inclined to think we are at the Walakatina River. Leach came in at six, and reported that he had crossed the neck which we are on, and gone along its south side a couple of miles, where he had found a hut built of logs, with rags stuck in the chinks, *and an elephant tusk;* we saw, also, some smaller pieces of ivory. As the ice was closely pressed in shore, no passage offered for a boat, but as he was leaving, the wind shifted to northwest, and the ice commenced to slack off again. Alexey then came in. He brought in from this hut a wooden drinking-cup, a wooden spoon, a wooden fork, an elephant tusk, and a small Russian coin, a copeck of the date 1840. So somebody has been here since Sannikov. Mr. Collins made a sketch of the hut, and of its surroundings. By eight P. M. a nice breeze from N. W. had sprung up. The barometer was at 29.85 at 41°, and the temperature 28°.

September 6th, Tuesday. — Called all hands at five. Breakfasted at six. Light W. breeze. Temperature 25°. Under way at 7.10, and proceeded very well until 10.30 (say six miles after rounding the point of the sand spit and keeping away to the southward), when we were brought up by the ice reaching in to the shore, and leaving no lane for us to advance in. We turned back to look for a chance off-shore lead, but none offered, and there seemed but one of two things left to do: either to drag our boats over the land, or wait for the ice to slack off. Unwilling further to strain the boats or tire the men, I concluded to wait for the effect of a freshening wind. Meanwhile I sent away the men with guns, and took advantage of the delay to visit the hut seen by Mr. Collins yesterday. It was quite an

elaborate building with a porch; and being plastered with mud on the roof and sides, was no doubt sufficiently wind-proof. No lack of fire-wood. Pine and spruce lay in logs all around, but we had already spoiled it of all relics. Lemmings without number ran around; owls, white and brown, are as common on this island as ducks, almost, and of a great size.

At twelve we dined. The regulation fog had come up and hidden everything, and the wind had all died away. Off shore the ice seems somewhat slack, and I made an effort to get the boats through to a lead, without success. We were obliged to unload, make a portage, and embark again five hundred yards below. At 1.45 P. M. resumed our journey and tracked and pulled along to the southward, following the coast line. In vain did we hope that each piece of land showing through the fog was Barencap, but at 6.30 Barencap seemed as far as ever, and I ordered the boats in to the beach for supper. From time to time I sent everybody out of the boats, except the pullers, making them walk along the beach. Occasionally we came to a steep cliff without ice-foot or beach, and then I took them in. On one of these walks the doctor found a slate cliff and fossil ivory.

At 6.30 supper and camp. I climbed the hills and looked for the land's end and the sea, but could see little on account of the fog. The water spaces seemed large, however, and that was one comfort. During the drag overland, I noticed Mr. Dunbar fall out and stagger to one side, when he sat down. I found upon inquiry that he had had another of his fainting spells, and the doctor tells me it is some heart trouble. This is indeed serious, for in the hourly excitements no one can tell what may occur to affect him. He has been di-

rected to do nothing beyond steering the second cutter.

We had, I think, by supper time entirely got clear of the sand bank, for the water was bolder, and we stood along in shore without difficulty. The cliffs made the dividing line, and now, instead of the low, sandy beaches with distant background of hills, we came to stretches of candle-snuffer hills like our land at Faddejew Island. These curious looking dirt-hills are in places seen back from the coast line. In no place yet had I seen land one hundred feet in height at or near the sea-shore. Mr. Collins saw seeming excavations.

At eight got under way again, and proceeded until 9.45 P. M., when, having made three miles, ran in and camped. I consider thirteen miles to represent to-day's work.

September 7th, Wednesday. — Called all hands at five. Breakfasted at six. Wind E. N. E. Temperature 24°. Under way 7.12. About Barencap 9.12, took departure at 10.30 and met big floe. Went to southeast to clear it, but failed; went to north northwest and succeeded. Filled away again on course S. W. by W. (true). Wind freshening. Ice streaming off before the wind. At 11.05 Melville called out he was leaking more than the pumps could keep free. Ran alongside a floating ice-cake all boats, and hauled out whaleboat. No leak, plug was knocked out in coming through the ice channel six and three fourths fathoms (Barencap distant about five miles). At 12.10 slipped from ice-cake and proceeded, having cooked dinner in the mean time. At 1.45 double-reefed my sail, as I was leaving second cutter out of sight. At 2.30 turned out one reef. Strong E. N. E. wind. Boats going five to six knots. Heavy sea. Boats very wet. Pump and bail all the

time. Cook seasick, then Mr. Collins at supper time. At six wind and sea moderating. Water ration, one pint each meal.

September 8th, Thursday. — At 1.30 ran into loose, streaming ice. Bothered and delayed until 4.30, when wind was found to be S. E. Ran alongside floe, and held on until daylight. Then slipped and ran southwest. Soundings in ten and a half fathoms. Strong wind, rough sea. Everybody cold, wet, and miserable. No sleep. At six weather changed. Bright sky, light S. E. wind. Warm sun. Barometer 29.85 at 40°. Got latitude at noon 74° 41′, north of Barencap. Evidently running before southeast gale some time before I discovered the fact of the wind having changed. During afternoon steered a course S. S. W. until four P. M., when, meeting a solitary floe drifting around, I had pity on the wet and exhausted creatures around me, and hauled out and camped. Sights place us in 136° 42′.

September 9th, Friday. — Called all hands at four A. M. Somewhat better after our rest, but still wet and cold. Light S. wind. An island in sight, bearing S. 57° E., distant fifteen to twenty miles. Is this Stolbovoi? Temperature 33°. Under way 6.20. Oars and sometimes sail. Ran alongside floe at eleven for dinner. Soundings seventeen feet. Stolbovoi Island bears S. 89° E. (magnetic).

A very suspicious looking mass of hummocks resembling land bore S. 19° E. (magnetic). Got latitude at noon 74° 19′. Light S. by W. breeze, with occasional rain or snow. Under way 12.15. At 2.30 encountered immense area of loose floe pieces, extending to the horizon east and west. Pierced it southwest in a neck about half a mile in width. At 3.30 sighted a low block island to westward. Ran towards it. Calm. At

5.45 laid on oars for supper, twenty feet water. At 6.05 went ahead again. Evidence of tide setting to southwest. At eight P. M. an impenetrable fog settled down over everything, and so completely shut out the land that after pulling until 9.40, three boats in a tow, I concluded to give up for the night. Ran alongside a rough floe piece, hauled out, and camped. Served out tea and four oz. pemmican to each person, and lighted a candle to see to eat it by. Dead calm. Seven feet water. Floe aground.

September 10*th*, *Saturday.* — Called all hands at seven. Breakfasted at eight. Light N. E. breeze. Temperature 31°. Our Liebig all gone. Last used for supper yesterday. Other boats out several days ago.

Land in sight about one mile distant the northern end of the island; no doubt Semenovski Island, bearing about west. Yesterday afternoon I saw a second island (Wassilewski Island) to the southward. Under way 8.30. Thick fog. Reached north end of island at 9.10. Stood along its western edge until 11.30, when ran in for dinner. Island seems eighth of a mile in width. Fresh deer-track and bear-track seen. Mr. Dunbar quite feeble. Island seems washing away. Mud. Deer antler found on top of hill. Teeth of mastodon found by doctor. Fresh pond of water found on hill-top. Island from thirty to one hundred feet high. Islands not the result of river deposits, and consequently fossil remains not brought here. That these islands had once tropical climates is proven by the coal found on Bennett Island.

Upon turning to at 12.45 P. M., I ordered five of my party to walk along to the south end of the island in quest of game, and I directed Chipp and Melville to send people from their boats for a like purpose. In

MAP
SHOWING THE COURSE OF THE JEANNETTE PARTY AFTER LEAVING THE SHIP.
POLAR SEA
JEANNETTE SUNK JUNE 12, 1881.
JUNE 23
JULY 3
JULY 10
JULY 19
JULY 20
BENNETT I.
CAPE EMMA
DE LONG ISLANDS.
JEANNETTE I.
INTENDED COURSE
KODELNOJ
NOVAYA SIBIR
NEW SIBERIAN ISLANDS.
Boats separated by the storm about here
LENA DELTA
BORCHAJA BAY.
TUNGUSEN
SIBERIA
152 East from Greenwich.

consequence, I had nine or ten people on the war-path across this narrow strip of land. Proceeded slowly along shore with the boats, and was soon agreeably surprised at hearing several shots, followed by the cry, "He is down!" Being near the south end of the island, I proceeded to round it to pick up the people, but, finding the shore too steep, I returned, and was proceeding along the west side of the island when I met the second cutter with a fine deer in the bow. I at once ran in to a small bay, ordered the boats unloaded, the deer dressed, and a meal prepared immediately. I was much pleased with the information that drift-wood was lying on the east beach of the island; that the hunters had fired at two deer, though one escaped; and that a flock of grouse (ptarmigan) had been seen.

As I had made up my mind to remain Sunday, either on this island or on Wassilewski, I concluded to be satisfied with what I found here, and remain. Food, fuel, and water secured, dry clothing, and a rest in prospect, certainly I was justified in thinking a bird in the hand worth two in the bush. Reindeer moss and scurvy grass are abundant. As soon as we get something to eat I shall send out the guns to secure that other deer, and the bear, if such an animal is on the island. The wind had veered to E., the thermometer at 32.5°.

Wassilewski Island in sight to the southward. The southern end of this (Semenovski) Island is worn away almost to a knife-edge. Standing around it in a boat, one would suppose he was passing under the bows of some very sharp ship. So intense has been the action of the cold that large masses have fallen off the sides of the island and lie prostrate on the beach; and huge cracks indicate where other land slides will occur before many seasons. There is, unpleasantly enough, ice

to be seen in large quantities, but I hope it is a loose, navigable pack, and one we can work if necessary at night. Uncomfortable enough as life in the boat normally is, it becomes absolutely horrible when, at night, in a strong wind we suddenly encounter streams of drifting ice. Unable to see, wet, cold, and wretched from want of sleep, we grapple aimlessly with our foe and try to overcome him.

I ordered one pound of meat to be served out per man, and at 4.45 P. M. we all sat down to a delicious meal of fried deer meat and tea. At eight I intend to repeat the operation, and meanwhile I shall send our hunters out for more game. An elephant's tusk was found by Alexey, and a small number of shells by Mr. Collins, about three or four feet above the sea-level, in the face of the bluff. Bartlett saw a flock of ptarmigan and killed three with one bullet. Two went into a cleft in the cliff, and were inaccessible. Mr. Newcomb shot another.

At eight P. M. we sat down to our supper proper, and a second portion of deer meat was served out to all hands — a little more than one pound each. This gave us a royal meal and finished the deer, except his bones, which we make soup of for dinner to-morrow. We have thus consumed since dinner-time eighty pounds meat alone — no bones — a little more than two and one fourth pounds each, and are feeling comfortable and warm. Wet bags and wet clothing are forgotten in face of hot meat and hot tea. After three attempts we got a dry place for our tents, and at 9.30 P. M. when we went to bed for a long night's sleep, our lesser discomforts seemed to fade away before the warmth and security which Semenovski Island afforded. The wind had freshened considerably, and was blowing half a

gale; snow fell thickly. No more ice seemed to be approaching, and I have strong hopes of being able to go on to the Lena without difficulty. All the hunters returned without seeing any more game, except ptarmigan. But as they only had a couple of hours before dark they could not go very far.

September 11th, Sunday. — The ninety-first day since the ship was crushed and ourselves thrown out on the ice. Called all hands at eight A. M., a long and seemingly refreshing sleep for all hands. Wind E. Barometer 29.90 at 32°. Temperature 32°. At 10.45 called all hands to muster. Read the Articles of War, and then I read divine service in No. 1 tent. Wind freshening again, and snow, hail, and sleet falling plentifully.

The fawn came near the camp twice this forenoon, and once she got, unseen by him, within thirty yards of Alexey, who took up the chase, and had not come in up to noon. I think it is very likely that the deer on this island consist of the one we shot and this fawn, for the coming back to the place of separation would hardly occur were there any others in the neighborhood. The doctor's theory that the doe remained behind the migrating drove in the spring to bring forth her young, is a very probable explanation of their being here now. No doubt these two islands serve as convenient stopping places for the deer going north in the spring and south in the fall.

For dinner we had deer soup and three fourths of a pound of pemmican. After dinner prepared the following record, which I shall deposit here in a tin case: —

SEMENOVSKI ISLAND, ARCTIC OCEAN,
Sunday, September 11, 1881.

This record of our arrival at and proposed departure from this island is left here in case of any search being made for us before we can place ourselves in communication with home.

The Jeannette, after drifting two winters in the pack ice, was crushed and sunk on the 12th June, 1881, in latitude N. 77° 15′ and longitude E. 155°, and the thirty-three persons composing her officers and crew succeeded in reaching this island yesterday afternoon, intending to proceed to-morrow morning toward the mouth of the Lena River in our three boats.

A record of our doings was left at Bennett Island (discovered by us) in latitude N. 76° 38′ and longitude E.-150° 31′, and one (before the loss of the ship) at Henrietta Island (discovered by us), in latitude N. 77° 8′, longitude E. 157° 45′; and a third was left in a boat-breaker on the ice, in latitude N. 77° 18′ and longitude E. 153° 25′.

We are all well, have had no scurvy, and hope with God's aid to reach the settlements on the Lena River during the coming week. We have yet about seven days' provisions — full rations.

GEORGE W. DE LONG, *Lieutenant U. S. Navy, Commanding Arctic Expedition.*

The hunters all got back by eight P. M., but beyond seeing many tracks they came across nothing. At 6.30 P. M. we had supper, — ptarmigan soup and fried pemmican and tea. We shall get under way to-morrow morning.

CHAPTER XVII.

THE LENA DELTA.

12—30 *September*, 1881.

Under Way again. — The Boats separate. — Heavy Gale. — Shoal Water. — Wading Ashore. — The Prospect. — Preparations for March. — Copy of Record. — The Start. — Terribly Slow Progress. — The Last Can of Pemmican. — Divine Help. — Straggling. — Ericksen Breaking Down. — A River. — Huts. — Proposals to send for Relief. — Well done, Alexey! — A Respite. — A New Start. — Trying to Raft. — Perplexities of the Country. — Fox-Traps. — Enough left for Three Meals only. — Unfaltering Trust. — The River. — Saved again. — Shooting the Deer. — Ericksen's Condition. — A Moccasin Print. — Drowsiness. — In the Fork of a River. — Doubts as to Position. — Flying a Black Flag. — Amputation of Ericksen's Foot. — Failure of Game.

SEPTEMBER 12*th*, *Monday*. — Called all hands at five; breakfasted at six. Fresh E. wind; temperature 31°. Under way 7.30; course, south southwest (true); 8.40 abreast north end of Wassilewski Island; 9.40 abreast south end of Wassilewski Island; 11.30 came to alongside ice for dinner. Run by estimation, sixteen miles. Soundings, four and three quarter fathoms. Under way at 12.30. Round to against ice at four. Whaleboat stove. Under way at 4.15; freshening east northeast breeze. At nine P. M. lost sight of whaleboat ahead; at ten P. M. lost sight of second cutter astern; wind freshening to a gale. Step of mast carried away; lowered sail and rode to sea anchor; very heavy sea and hard squalls. Barometer falling rapidly.

September 13*th*, *Tuesday*. — Very heavy northeast gale all day until six P. M., when it moderated; very heavy squalls; tremendous sea. Boat shipping a good deal of water, she kept sea anchor abeam. At ten A. M. got out the sail and attempted to ride under the lee of it. After doing so very well for an hour, the sheet parted and we lost sail and yard. Barometer fell to 29.35 at 35°. In the afternoon made a sea anchor of oars and mast, and managed to ride out gale under their lee. After six P. M. wind and sea moderated rapidly; clouds broke away; moon and stars appeared, and auroral flashes. At eight P. M. set a jury sail made of a sled cover, and kept the boat away to the westward before the sea.

September 14*th*, *Wednesday*. — Wind ahead; sea moderating rapidly. Rising barometer. Towards noon the wind settled to about south. Boat making about a west (true) course of about one knot per hour. Nothing seen of either second cutter or whaleboat. Soundings in ten fathoms. Served out eight and a half pounds of ham instead of the pemmican rations at dinner.

September 15*th*, *Thursday*. — Light south winds; much swell but moderating rapidly. Ericksen got latitude at noon. My hands disabled since yesterday. Kept boat on port tack; making nothing better than west under jury sail; eight and a half fathoms; sewed two parts of jury sail together. Very little progress, not one half knot per hour.

September 16*th*, *Friday*. — At four A. M. calm. Sounded in six feet of water. Called everybody and got breakfast. At six got out six oars and pulled south. Seals numerous. Young ice met. At eight commenced to raise little lumps of land on port bow and ahead; at

Second Cutter: Chipp.

Whaleboat: Melville.

First Cutter: De Long.

THE SEPARATION OF THE BOATS IN THE GALE.

nine grounded. From this time until six P. M. struggling to get into water deep enough to float us sixteen inches; more than a mile from shore. Waited for tide to rise, but there seemed to be only two inches increase. Land line running east and west, low and flat. Finally, at six P. M. ran up to a piled-up mass of thin scales of ice in eighteen inches of water, and hung on to it. Got ice from it for cooking. Ice and water much fresher than anything from the sea.

September 17th, Saturday. — After a most miserable and uncomfortable night called all hands at six and got breakfast. Barometer 30°. At eight slipped from ice and tried on the starboard tack. Grounded at a few hundred yards. Tried port tack. Grounded again. Struggled back to ice by eleven. Made raft. Got dinner. Decided to unload and wade ashore. At one loaded raft with tents, cooking stoves, and boat-box, and though it was buoyed with two breakers it took the ground. First load started at 2.45, — everybody except doctor, Boyd, Ericksen, and myself. Water knee-deep; land one and one half miles off. Returned from first load at 4.15. Hauled boat farther inshore. Started second load (Collins and Sam remained behind disabled) 4.45. Second load landed and men back by 6.45. Hauled boat another drag inshore, then say one eighth of a mile distant. Got her in to one half of a mile distant. Then all got out and carried load ashore. I landed at eight P. M. Dark and snow-storm, but Collins had a good fire going. Sent everybody except doctor, Collins, Sam, Boyd, Ericksen, and self back for one more load, and at 10.20 had landed everything except boat, oars, mast, sled, and breakers. Got supper, — two pounds pig's feet additional. Negus chronometer stopped at about eleven P. M., — only

eight hours after winding. Pitched camp. No watch set. Chronometer reads 7h. 34m. 6s.

September 18th, Sunday. — Called all hands at eleven A. M. Got breakfast of tea and pemmican as soon as we could, and then the doctor commenced overhauling us generally. Prepared to make a large fire to dry us. The ground under us has been so wet all night that we are soaking wet as a rule. Occasionally our underclothes are only wet in patches, but as a rule we are wet, bags, clothes, and all.

Sent out afternoon to the boat, and brought in the alcohol, all clothing, boat-box, etc., and there was left nothing but the oars, mast, half boat cover, water breaker, etc. Had fires going all the time to dry our clothes. We must look our situation in the face and prepare to walk to a settlement.

For dinner had seven pounds of ham instead of pemmican, and for supper soup made from two ptarmigan and two pounds pig's feet with two pounds ham instead of pemmican. Snow, hail, and sleet, and strong wind. Piped down at nine. No watch set. Divine service at five P. M.

September 19th, Monday. — Called all hands at 6.30. Breakfast of tea and five pounds of tongue. This exhausts our canned meats, and now we have about three and a half days' rations, pemmican and plenty of tea.

I ordered preparations to be made for leaving this place after dinner, and as a beginning all sleeping-bags are to be left behind. Foot-nips may be made of them. List of things carried and left behind will be written in here : —

LEFT BEHIND.

1 sextant.
1 artificial horizon.
Mercury.
1 almanac, 1881.
1 useful table.
1 Chauvenet's Lunar and Eg. Alt.
1 comparing watch.
1 cooking stove.
14 mess pans.
1 cooking pot.
1 cooking pan.
1 box rock specimens.

Medical box, viz. —
10 rolls bandages.
2 oz. opium.
½ lb. cathartic pills.
2 elastic trusses (double).
1 case urinary instruments.
1 small operating case (partial).
1 roll lint.
1 lb. cotton batting.
1 case sticking plaster.
1 clinical thermometer.
Small tray empty vials.

THINGS TAKEN ALONG.

2 pocket cases complete.
2 operating knives.
2 small finger saws.
2½ jars carbolized vaseline (four oz. each).
6 oz. glycerine.
6 oz. turpentine liniment.
2 oz. laudanum.
2 oz. cathartic pills.
2 oz. diarrhœa mixture.
1 oz. tincture capsicum.
2 oz. carbolic acid.
8 flannel bandages.
½ roll lint.
⅛ roll plaster.
½ roll isinglass.
15 Dover's powders.
30 sulp. zi. powders.
1 quart brandy.
1 operating saw.
1 hatchet.
1 pocket barometer.
1 pocket compass.
1 thermometer case.
1 prayer book.
1 chart case.
4 tin cases.
Log books.
Papers.
Journal.
1 pocket chronometer.
1 Winchester rifle.
2 Remington rifles.
1 small Winchester rifle.

COPY OF RECORD LEFT IN INSTRUMENT BOX.

MONDAY, 19th of September, 1881.
LENA DELTA.

The following named fourteen persons belonging to the Jeannette (which was sunk by the ice on June 12, 1881, in latitude N. 77° 15′, longitude E. 155°) landed here on the evening of the 17th inst., and will proceed on foot this afternoon to try to reach a settlement on the Lena River: De Long, Ambler, Collins, Nindemann, Görtz, Ah Sam, Alexey, Ericksen, Kaack, Boyd, Lee, Iversen, Noros, Dressler.

A record was left about half a mile north of the southern end of Semenovski Island buried under a stake. The thirty-three persons composing the officers and crew of the Jeannette left that island in three boats on the morning of the 12th inst. (one week ago). That same night we were separated in a gale of wind, and I have seen nothing of them since. Orders had been given in event of such an accident for each boat to make the best of its way to a settlement on the Lena River before waiting for anybody. My boat made the land in the morning of the 16th inst., and I suppose we are at the Lena Delta. I have had no chance to get sights for position since I left Semenovski Island. After trying for two days to get inshore without grounding, or to reach one of the river mouths, I abandoned my boat, and we waded one and a half miles ashore, carrying our provisions and outfit with us. We must now try with God's help to walk to a settlement, the nearest of which I believe to be ninety-five miles distant. We are all well, have four days' provisions, arms and ammunition, and are carrying with us only ship's books and papers, with blankets, tents, and some medicines; therefore, our chances of getting through seem good.

GEORGE W. DE LONG,
Lieut. U. S. Navy Commanding.

During forenoon Alexey shot a large gull, which we made into soup for dinner, with our second drawn tea and six ounces pemmican. At 2.45 went ahead, and at 4.30 stopped and camped. Loads too heavy, men used

up — Lee groaning and complaining, Ericksen, Boyd, and Sam hobbling. Three rests of fifteen minutes each were of no use. Road bad. Breaking through thin crust; young ice everywhere. Occasionally up to knees. Conclude to send back log-books, stove, two alcohol, one tent, binoculars. Built a roaring big fire, and dried ourselves while we ate supper. Then sent Nindemann back with Alexey and Dressler to deposit log-books. They returned at nine P. M., when we all crawled into our tents and tried to sleep. Bright sun all the afternoon. Light south wind. Toward eight P. M. became cloudy, and wind backed to S. E. and freshened.

September 20th, Tuesday. — Called all hands at 6.30. Slept better than I expected on our wooden beds. Woke up frequently to shiver with cold. Sick about the same, but no worse. At 8.05 got under way. Left No. 1 tent behind because we could not carry it. No. 6 tent is made of cotton, and sheds water better; and it is my intention to cut it at each end and use it as a coverlet for the fourteen of us.

I found that our progress was terribly slow. The sun shone brightly and enabled me to keep an idea of our course, generally to the southward; but so many ponds with thin ice and mossy swamps intervened that we were making a queer traverse table. The most serious trouble was with Ericksen, who kept us all back as he hobbled along a foot at a time. Frequent rests did him no good, and at 11.05 I was compelled to halt the party, for he was done up. Four miles made good. Boyd and Sam did very well, though unable to carry any weights. Every one of us seems to have lost all feeling in his toes, and some of us even half way up the feet. That terrible week in the boat has done us a great injury.

Ordered tea made and pemmican served out. We opened our last can (forty-five pounds), and in order to make it hold out as long as possible, I so cut it that it must suffice for four days' food. Then we are at the end of our provisions, and must eat the dog, unless Providence sends something in our way. When the dog is eaten — ?

I was much impressed, and derive great encouragement from an accident of last Sunday. Our Bible got soaking wet, and I had to read the epistle and gospel out of my prayer-book. According to my rough calculation it was the fifteenth Sunday after Trinity, and the gospel contained some promises which seemed peculiarly adapted to our condition.[1]

During the forenoon we had almost got out of the ridges of drift-wood, and I began to be uneasy lest we should wander so far away from them as to jeopardize our tea and warmth. At 12.30 went ahead again, and almost immediately struck *deer tracks* comparatively fresh. Elated beyond expression, I pushed ahead, following them, and heading about south, and soon came to large masses of drift-wood again. Three traps of some kind were here found, but whether to catch deer, wolves, or foxes I cannot say. A fog was rising from the southward, and I began to be in hopes that we were close to the river, when a shout from the rear caused me to notice that my party was straggling out too much. Upon their closing up, I learned that Ericksen had lain down, desiring to be left. I rushed back, followed by the doctor, and, by rating the man soundly for his folly, got him on his feet again and drove him

[1] The passage is in Matthew vi. 24 : "Take no thought for your life, what ye shall eat, or what ye shall drink ; nor yet for your body, what ye shall put on," etc.

WADING ASHORE.

before me. But his condition is serious indeed, and he can neither keep up with us nor be carried. Reaching anywhere in four days with him disabled is out of the question; and it looks as if I must send the doctor and Nindemann ahead for assistance.

Before getting Ericksen up to our halting place with the doctor, I went ahead to send Nindemann and Alexey on in the deer tracks, to see if we were close to a river mouth; but upon reaching the place at two P. M., I found they had gone in chase of four deer which had appeared in my absence. While waiting for results built a fire. At three Nindemann and Alexey returned, having seen a herd of seven or eight deer, but they were unable to get a shot. At 3.20 went ahead again. This time the doctor and I brought up the rear to prevent Ericksen giving up, and we succeeded in advancing him a mile by 4.20. Here we crossed what I consider a river mouth, from the enormous masses of wood piled up on its southern shore, and as I had instructed Mr. Collins, Nindemann, and Alexey to deposit their loads here, and proceed in quest of game, I announced this as the camp. If game can be obtained we are all right, but if not, here must some decision be made about sending forward for relief.

At 5.30 hunters returned, saw plenty of tracks but no deer. Supper at six. Light southeast wind. Barometer 29.87 at 50°. Temperature 29°. When we halted at noon for dinner a little snow-bird flew around us and finally lighted upon my flagstaff which I carry. Mr. Collins immediately exclaimed, "That is good luck, Captain." Such small things even are noticeable in our kind of life. During the afternoon we saw what I took to be a gate-post, with slots for fence-rails; but Ericksen says it was a loggerhead for a grain-boat or vessel of that kind.

Upon halting for supper we, of course, built a tremendous fire, for the cords of wood along the beach had no owner but ourselves. In front of this we sat and roasted, while our wet clothes steamed in clouds. Our beds we made of logs, and our coverings of our blankets, and after we were all down our half of the cut tent was hauled over us like a tarpaulin over merchandize. Day's walk, five miles.

September 21st, Wednesday. — During the night snow fell heavily, and the wind increased. Our tent cover blew away from us, owing to a mistake which we made of turning in with our feet to the fire and our heads to the wind. Besides this, we were all frequently awake to shake, for I must confess it was a very cold bed.

At six I called all hands. S. E. gale, snow and fog. At 7.30 we loaded up and went ahead until 11.30. Boyd and Sam made good progress, and Ericksen did better than yesterday, but still it was terribly slow going; four miles was all that we covered in the four hours. I followed the heavy timber on the south bank of the river, though we saw no water except when thin ice let us through knee-deep into swamp-grass and mud. On the northern bank there appeared no drift-wood. Numerous fox-traps were seen, some of them sprung. Deer tracks were seen in large number, evidently made by a large herd.

At eleven Nindemann, whom I had sent ahead of everybody to look for game, came up to me and reported that we had reached a river one hundred yards wide, with good, smooth ice along the shore. We had been running about a southwest course, and this river was in the same direction; but now the line of heavy timber was on the north side, just away from us. This gave

me no anxiety, however, for enough wood remained on our (the south) side to answer all our demands.

At 11.20 I halted and ordered dinner, which we were a long time in getting, owing to wet matches, damp wood, strong wind puffs, etc. To reach the smooth river ice we had to leave the swamp and drop waist deep in snow. A fox-trap was close by with a fox's head in it, but the body had been eaten or cut off close to the neck. Our plan of using one ration of tea for all three meals has received occasional shocks; as for instance, to-day a small can of salt had been, I find, carried in the tea-kettle for want of a better place, and Lee has capsized it among the tea-leaves.

At one went ahead again, and at 3.30 came to a bend in the river making south, and to our surprise two huts, one seemingly new. In view of the action I am about to take, I decided to remain here, and we entered in and took possession. Distance made good six miles, this one hundred and first day since we lost our ship. Is this Tscholbogoje? is now an important question, for if this pair of huts make a settlement, our chances of keeping on successfully are very slim indeed. According to my account we are now thirty-five miles away from the next *station!!* and eighty-seven miles from a probable settlement. We have two days' rations after to-morrow morning's breakfast, and we have three lame men who cannot make more than five or six miles a day; of course I cannot leave them, and they certainly cannot keep up with the pace necessary to take.

When I saw these two huts — one evidently new, and both habitable and intended for a prolonged residence — I concluded that this was a suitable place to halt the main body, and send on a couple of good walkers to make a forced march to get relief. The two I selected

were the doctor and Nindemann ; and I had a preliminary conversation with the former on the subject, giving him my views. He is to push on until he does come to a settlement, and can get back relief to us. And we are to remain here and try to eke out an existence with two days' rations drawn out to their fullest extent, and such chance game as may offer. Though loth to do anything which seems like abandoning us, he is willing enough to do anything that may give a chance for relief, and by to-morrow morning I shall have his orders perfected and my plans made. Go on we cannot just now, and here we can have at least heat and shelter. Seeing something across the river and farther down that looked like a signal-post or a fish-frame, I sent Nindemann along to look at it ; and some hut-like objects to the eastward being seen, I sent Alexey over to look at them. This was at four P. M. A flock of five small ducks had been swimming around in the river, and several rifle shots had been fired without effect. I had caused a strict search to be made around both huts for food of any kind, but nothing could be found. At six Nindemann returned. He found a gull in a trap and brought it in, but alas ! it was rotten. The trap had been set for a fox or a goose, and baited with fish. We ate our supper and crawled under our blankets. Two good berths in the new hut gave bedsteads to the doctor, Collins, Nindemann, and myself ; and ordering the fire to be thrown outside, and the house shut up to keep the heat in, I consigned myself to sleep. At 8.30 Alexey had not yet returned, and though I was anxious to have no one away from me, I could not doubt he would safely return. At nine P. M. a knock was heard outside, and Alexey's voice asking, " All asleep inside ? " and in an instant I was up. Sticking his head in the

door, Alexey said, "Captain, we got two reindeer;" and in he came bearing a hind quarter of meat. Sleep was at once forgotten. Fire was made, and cooking begun in both huts, and we consumed about one and one half pounds cooked meat each, finishing all that Alexey brought, except two tongues, before we cried enough.

Alexey went toward these seeming huts, and found they were in fact huts, but very old. While walking around and beyond them he saw deer traces so fresh as to make him think the animals were close at hand. He was in doubt as to incurring a scolding from me if he stayed away, or to take the chances of getting meat. He decided he would try for meat, and went on. Soon after a snow-squall he saw deer horns moving, and by strategy unsurpassed, crept upon a herd of fourteen, and at twenty-five yards' distance dropped two. The remainder at once left. Tickled to death, he cut off a hind leg, and cut out both tongues, and staggered in cold and wet. Well done, Alexey! The darkest hour *is* just before the dawn.

September 22d, Thursday. — The hut remained warm until toward daylight, when it began to grow chilly. Called all hands at 5.30, and had a pemmican breakfast, and at 6.45 sent out Nindemann, Alexey, and five men to bring in our two deer. This, of course, changes my plans. We can now remain here a day or two to let our sick people catch up, and while living upon deer meat on hand can search for more to cook and carry with us. The two remaining days' pemmican is shut up tight during our use of other food. Looking around our hut we can see traces of Russians or other civilized beings. A rude checker-board, wooden forks, pieces of pencil, etc., and other evidences of the use of tools by

somewhat skilled workmen. At noon light east breeze; temperature air 30°. Within the hut, at my berth in front of the fire, the thermometer stood at 70°.

At 1.50 Nindemann and his party returned, bringing in the two deer; seven hours' walking was necessary for them evidently. We immediately commenced getting dinner, and at three sat down to one and a half pounds each of fried steaks, liver, and heart. As soon as we were through dinner we had to commence preparing for supper, because, in our limited stock of cooking utensils, a pot, frying-pan, and pot cover, we can do but little at a time. Boiled down for two hours a lot of bones for soup, and served out one half pound meat for frying. At eight, therefore, we had soup, one and a half pints each, and a half pound fried meat, and at nine put out the fire and went to sleep, — saving our candle-ends for some emergency. Tea was dispensed with also, because the pot was in use for soup. The sick seem to be improving. Boyd is on the rapid mend, Sam slowly, and Ericksen is no worse.

This rest, and food, and shelter will no doubt restore their feet at the earliest moment, and I must simply wait and hope. They cannot move now, and we are so well off for deer meat (probably one hundred pounds clear meat) that the necessity for separating our party seems not a pressing matter.

September 23d, Friday. — Called all hands about 6.30. Breakfast, three quarters of a pound fried deer meat, one and a half pints tea, at eight.

At noon light S. W. breeze. Barometer 29.80 at 55°; temperature 25°. Appearance of high land to the southward. Dinner of soup and three quarters of a pound fried meat. From the surgeon's report of the condition of the sick men I have decided to move on to-morrow morning after breakfast.

Took an account of our deer meat on hand. Meat free from bone, fifty-four and a half pounds; meat on the bone, fourteen pounds; bones for soup, fifteen pounds. After we had served out twenty-two pounds meat on the bone for supper to-night, the fourteen pounds on the bone we shall have for breakfast in the morning, and the fifty-four and a half pounds clear meat we carry with us.

At three P. M. we each had one pint soup made from marrow bones. At six P. M. had supper of tea, one and a half pounds meat on bones, and then set to work boiling down remaining soup bones for breakfast.

September 24th, Saturday.— Called all hands at 4.20; at 5.20 had soup, and at six tea and one pound meat on bones. Temperature 27.5°; mild and pleasant. Commenced preparations for departure at seven. Completed record [of movements of the party], placed it in tinder box, and lashed it up on house-post inside. Started the sick ahead under the doctor's lead at 8.05, and at 8.20 I brought up the rear with Görtz, leaving my Winchester rifle in the hut as a surprise to the next visitor.

Followed along the bank of the river, rounding one creek and going across the ice of another, and proceeded until 11.20, by which time we had made good about three and a half miles to the southward, allowing for all crooks and turns. Passed the ruins of three huts. Upon rounding the creek, at the end of which these huts were situated, and reaching the river again, I was struck with the fact that it was no longer frozen over, quite a little sea was raised by the wind showing deeper water, and that the shores shelved rapidly outward. Discouraged at the slow pace at which the men staggered along under their loads, and worried by the

exhausted looks which I saw at each rest, it seemed to me that if I could make a raft we might get along faster or at least more easily. I concluded to try it, and while halting for dinner selected suitable logs for our frame. After dinner went to work again, but why proceed. At 5.40 P. M. our raft, wretched and frail for want of lashings, was finished, and at the risk of losing all our things we embarked and tried to get it out in mid-stream to send it along before the wind under sail. But a strong ebb tide was now running, the wind had grown lighter, and our raft was firmly grounded. In disgust I abandoned the whole thing, and we again loaded our backs and plodded on. I had sent the sick on with the doctor afoot, towards some huts which Alexey claimed he saw; but upon catching up with them at 6.40 I could see no huts, and Alexey now thought "other side river stop," and I halted the party, made a fire, and got supper. Wood apparently ended; all our trees being stuck in the banks and requiring much labor to get them out. Dried ourselves. One pound deer meat for dinner, each.

At ten made a rough bed of a few logs! wrapped our blankets around us and sought a sleep that did not come. Day's walk, five miles.

September 25th, Sunday. — A wretched night, no sleep, no rest, cold and stiff. Called all hands at 5.20; three quarters of a pound deer meat at 6.30. Started ahead at seven, and soon after crossed a creek, fortunately iced over. Good road, and by 11.25 had come, I think, six miles down the river. Halted for dinner. Read divine service. Made the unpleasant discovery that we had but eight pounds deer meat and two tongues remaining. Some error in weighing before starting, or in serving out. Ate all for dinner. Went

ahead again at 1.10, and, thank God, came in sight of two huts at four P. M. At 3.30 we had made four miles good, cutting off the nose of the face in the Delta. Here we had to take to the bluff, and the traveling was heavy, terribly so, still the pace was forced, and at 4.50, when the advance got in, they had covered two miles more, making six miles for the afternoon, or twelve miles for the day. But recollecting that we had no sleep last night, it has been a hard day's work for us. I arrived at 5.50, having remained behind to drive up Lee. A great trouble to-day was the way in which our feet balled up. Occasionally breaking through the ice our boots got wet and then collected snow and surface crust readily, which froze at once and made a man's feet as large and unwieldy as if walking in sand-bags. It is hard to make the chart reconcile with the country in some instances. Though I left water in cutting across the neck and reached water after crossing, yet we were all the time on a smooth, frozen surface with a small timber line on each side, and in one place the road had all the appearance of a dried river bed. Here holes were encountered, into one of which I and several others tumbled to our waist.

Fox-traps were seen every two hundred yards or so, baited with pieces of bird. Some of them were sprung, but most of them were all right. The plan seems to be to entice the fox within a pen by meat, in detaching which he dislodges a small upright and a log falls down on his back. One of our two huts had fallen to decay, and was uninhabitable. The other was large enough to cover us all, but it was very dirty. Some deer horns showed that game had been caught, some mouldy scraps within showed that the meat had been

eaten, and some wooden forks and plates showed that more civilized people than natives had lived in the hut. Several drying frames and fox-traps were around in the vicinity. The land bluff was probably twenty-five feet high. Supper at 6.30 — tea and four fourteenths of a pound of pemmican. Turned in at 7.30 P. M.

September 26th, Monday. — Called cooks at 5.30. Breakfasted at 6.30 (tea, four fourteenths pound pemmican). Doctor's report not so good. Ericksen has an ulcer on the sole of his foot, and, though he can yet walk on it, in a few days it will be too bad for him to use it at all.

At 7.30 set Nindemann and the men to work to build a raft for crossing the smaller stream, and sent Alexey along its bank for a mile or more to look for a chance means of fording or crossing on ice. No such crossing could be found, and at ten, our crazy raft being ready, we commenced to ferry over.

The first party consisted of Mr. Collins, Alexey, and Lee, with Nindemann and Kaack to ferry. They succeeded in reaching the other side by dint of hard paddling; for though the raft would stick in the mud six feet from shore, at ten feet no bottom could be got with a ten foot pole.

At 11.30 the raft was back, and I attempted to send a second load of five passengers this time instead of three; but it was too much, and I had to come down to three.

At 3.45 P. M. got the last load (the surgeon and Ericksen, with Görtz) over, and as soon as we could get our priceless lashings from the raft we had our dinner (four fourteenths of a pound pemmican and tea). This leaves us exactly three meals more food and the dog. But still the unfaltering trust in God which I have had

all along makes me hopeful that some relief may be afforded us.

At 4.30 went ahead again, and by 6.55 had made four miles. Darkness was now approaching, and I ordered a halt for the night. It is hard to tell whether we stopped on *the* river or not, for we came south southwest and southwest; and, according to my chart, *the* river should run west. We took *a* frozen stream south southwest for the sake of the walking, and then cut "across lots" to what I thought was *the* river. But we shall see in the morning. Stood by for a cold night, and no sleep.

September 27th, Tuesday. — After a cold and comfortless (and to nearly all hands sleepless) night, the cook made tea at daylight, and at 5.05 we had our breakfast, — four fourteenths pounds pemmican. One more meal left.

Last night at our supper one half ounce alcohol was added to our second cup of tea, to our advantage no doubt, but it has nauseated me somewhat this morning. At six we were ready to start, but Nindemann saw reindeer, and I sent him and Alexey in quest of them. They were nine in number, and coming toward the river, or down the wind.

Ericksen's foot in bad condition this morning. At eight we heard a shout and saw our two men on the eastern horizon. Sent five men out at once, and at 9.45 they arrived in camp, bringing a fine buck. Saved again! Eleven deer seen, — ten escaped.

I need hardly say how great the relief was to my overstretched mind. Our last meal was on hand when I sent Nindemann and Alexey off, and had they failed we would have been obliged to eat it without advancing a foot, and with eight miles more to make before com-

ing opposite to a possible settlement. Our provisions would consist of poor Snoozer.

Nindemann and Alexey crawled around to leeward of the herd, until they went as far back nearly as our ferry of yesterday. Here they got within one hundred yards and fired, Nindemann's Winchester failing to explode, but Alexey's Remington killing a fine buck, — as much as five men could drag in. At 10.30 fourteen hungry men commenced eating fried deer meat, and I must admit we ate three pounds apiece before we were satisfied. Then I called a halt in eating, and weighed what remained. We found ninety-eight pounds clear meat, free from bone, nineteen pounds neck (for soup), and enough meat on the ribs to make two meals alone. Besides this, there were the soup bones, heart, liver, brains, and tongue, — in fine, I think three days' rations, allowing one pound each for a meal. If ever Divine Providence was manifested in behalf of needy and exposed people, we are an instance of it. All that I need to make my present anxiety *nil* is some tidings of the other two boats and their occupants.

The ulcer in Ericksen's foot has sloughed away so much of the skin as to expose the sinews and muscles. The doctor fears that he may have to amputate one half, if not the whole, of both feet.

At 12.30 went ahead filled and comfortable, each of us, except Ericksen, shouldering about fifteen pounds of meat, in addition to his ordinary load. The doctor and myself had each a set of ribs on our backs, and as we trudged along all of us presented a queer spectacle, somewhat of a nature to surprise our friends could they see us. By four P. M. we had advanced about three and one half miles direct, but, by cutting across an angle we

no doubt saved a mile more, making along the river a distance of four and one half miles. Here, seeing lots of wood, and more beyond, and knowing how exhausted we were from want of sleep last night and our having loads to-day, I called a halt, ordered supper (nine pounds neck, seven pounds fried ribs), and made preparations for rigging our tents against the bank as a kind of shelter to crawl under.

We had had S. E. winds all day and thick snow, but upon halting the wind seemed to back to the east and grow very light. The river here seems to make a long stretch southwest. According to my reckoning we are only four and a half miles from a point opposite Sagastyr. To-morrow will show whether I am right and whether Sagastyr is a settlement. May God grant it is.

To our astonishment upon halting we found a moccasin print in the snow, extending from the water to the bluff. Alexey says it is about two days old. From the bluff we can see across the river three things which look like huts.

September 28th, Wednesday. — Called cook at five. All hands at 5.55. Breakfast, soup (neck ten pounds), ribs fourteen pounds, tea. Though last night was not so uncomfortable, for we were under the lee of a bank, and had our tents laid over us, we did not get much sleep. For a few hours we lay stupid from sheer exhaustion, and the rest of the night we were kept awake by the cold, and the shift of wind right along the beach. Our breakfast was warm and refreshing, and we got under way at eight. At 8.45, when I ordered the first rest, I was sure we had made a mile; and my surprise was great to find everybody fall asleep, myself included. We were evidently worn and jaded, and for every twenty minutes' march I rested ten minutes thereafter.

We saw the tracks of two men walking along the beach the way we had come; and at 11.10 we came to an old hut, which apparently (from fresh embers and meat scraps) had been used last night. Here the river made a long bend to the right, and anxious to shelter and rest my weary party, I halted for dinner. A considerable distance ahead of us on our side of the river is another hut-like looking structure for to-night.

After getting my breath and resting a few moments, I took a look at the situation and I was considerably nonplused. Before us ran a river south southwest, and at right angles to it, or east southeast, ran a second. We were therefore in a fork, and in any case had to cross a wide (one fourth of a mile) river before proceeding on our journey. This involved a raft. and suitable timber was neither convenient or accessible, even if we had lashings enough, which we have not. I sent Alexey along the stream running east southeast, and when he came back he said it turned up more to the northward and grew wider. I am inclined to think we have reached the end of the Delta, and that the reason why it does not correspond with my chart is because the shoals of sixty years ago have become raised lands. Sagastyr, if there is such a place, is five miles southwest from us, if I am right, and the tracks of the men seen this morning would point at their coming from there.

If Chipp or Melville got through all right they would naturally send back to look for us, and these two men may have been on some such errand. At all events, we are too much fagged out to do anything more without some sleep, and I shall stay in this hut all night. We had dinner (ten pounds ribs, five and a half pounds heart and liver), and at 1.10 P. M. set Nindemann, with

Alexey and Görtz to patch up the hut and make canvas door, while the rest were put at work gathering wood for our use and for a signal fire this evening. I intend to light a big fire outside the hut in hopes it may attract attention.

At 5.30 we had supper (eight and one fourth pounds bones for soup, one half pound deer meat), and immediately commenced lying down. By eight P. M. I had got everybody turned in, our signal fire burning brightly, our hut closed up, and I went to sleep, worn out.

September 29th, Thursday. — One hundred and ninth day. Called the cook at six A. M. Fire had of course to be made, and at seven we sat down to breakfast; one half pound meat apiece and tea.

At eight sent Alexey along the river running to the eastward in quest of game, and at the same time to look for a chance of crossing it, or for a bend in it looking to the southward and westward. The other men were put at work gathering fire-wood. Exceptions: Nindemann, who was sent along the east river seeking for materials to build a raft; Görtz, who was put to work erecting a flagstaff for showing a black blanket, and in repairing our hut; and Boyd and Sam, who acted as our internal police, while the cook got water for dinner purposes.

When I turned in last night I was in hopes that I should find ice enough here this morning to cross the river on, for though I think we have reached the end of the Delta, I am not sure of it, and I do not like the idea of standing still. No boat, and no materials for building even a crazy raft. Water on both banks, and but few days' provisions. One does not like to feel he is caught in a trap. Poor Ericksen's condition becomes

more and more critical. The doctor tells me this morning that his foot is sloughing away very fast, and that unless he can very soon be given the care and medical treatment which only a prolonged stay at a settlement will admit, his life is in danger. From the symptoms of a couple of days back the doctor fears lockjaw may intervene and carry him off; and in fact, it seems hard to see how he can recover in any case. If we could move on, and I forced him along, it would probably shorten his life; if I remained here and kept everybody with me, Ericksen's days would be lengthened a little at the risk of our all dying from starvation. This is evidently a crisis in our lives. I can do nothing more. We cannot cross the water until it freezes, or until we are ferried across it. I may be mistaken in our position, and we may be still twelve miles from the Delta end. This river making to the east may be the river I thought we rafted over some days ago, and we may be that much out. Any raft that is built must be large enough to carry us all at one time, for in such deep water and strong winds, there can be no coming back and forth; and how can we secure enough logs together to float us, having only a few ends of lanyards from the mens' bundles? The doctor and Mr. Collins started out on a hunt, after breakfast, too, but beyond a ptarmigan or two they saw nothing.

At twelve had dinner; eight and one fourth pounds bone soup, and seven pounds meat. At 12.15 Alexey and Nindemann returned, having come together and proceeded in company about four miles along the river. According to Nindemann the river proceeds indefinitely east southeast. Two miles from us they came to a two-man hut, which seemed to have been recently occupied. A portion of fish found there

tasted to us fresh and good, both raw and cooked. About one and a half miles from us the river was freezing, and in a day or so might be fit to walk over; but no timber for a raft could be found. A few old deer tracks were seen, but no deer. Nothing encouraging in this forenoon's work.

I caused this morning a black flag to be displayed on poles lashed together, about twenty feet in height, but the weather is so thick I do not think it will attract anybody. A large gull was drawn toward it, and Alexey shot him, ensuring us gull soup for supper.

Parties out for wood after dinner. Alexey and Nindemann rigging fish-lines. Sam plucking and making ready gull. Cook chopping wood, and others repairing or patching our hut or their clothes. At six had supper, one half pint gull soup, one half pound fried meat. At dark built fires again on the point in hope of attracting attention; but the attention of whom? At eight turned in. The wind moderated considerably, and backed to W. N. W., and as the water smoothed down I was glad to see ice form on both rivers.

September 30th, Friday. — One hundred and tenth day. Called the cook at six A. M. Breakfast at 6.50. Tea and one half pound fried meat. Light west breeze. Barometer 30.10 at 65°. Temperature 16.5° at nine. The main river is covered over with a sheet of ice, and I have sent Nindemann to examine it for a crossing place. Our hut remains comfortable for the first hours of the night, but towards daylight it becomes so cold and uncomfortable that sleep is out of the question. Boyd and Sam are discharged from the sick-list to duty. Ericksen is no better, and it is a foregone conclusion that he must lose four of the toes of his right foot, and one of his left foot. The doctor commenced slicing

away the flesh after breakfast, fortunately without pain to the patient, for the forward part of the foot is dead; but it was a heart-rending sight to me, the cutting away of bones and flesh of a man whom I hoped to return sound and whole to his friends. May God pity us, and grant that this is the only mishap that is to attend the entire expedition. Now, of course, the man must be dragged, for his walking is out of the question. At the present daily decrease in temperature we shall not have to wait long for the freezing over of the river. Nindemann and Alexey upon their return report they crossed the east river about one and a half miles from here.

At twelve had dinner; seven pounds stew, or one half pound each. I know this is not enough food per day, one and a half pounds, for I am certainly hungry, and I do not have even the work of bringing the wood, which the men have. But our deer meat will last just three days at one half pound a meal, and I cannot increase the issue.

After dinner I sent Alexey on a deer hunt; Mr. Collins on a general short hunt; the men for fire-wood, and Nindemann was put at making a sled-litter to carry Ericksen. The doctor thinks the latter cannot live unless we are fortunate enough to make a settlement within two or three days. Alas! alas!

By six P. M. Mr. Collins and Alexey both returned empty-handed. Alexey had gone, he thinks, about nine miles, and saw nothing except old deer tracks.

Supper, one half pound deer meat and tea. Fire going on our signal hill as usual. All abed by eight P. M., our dirty hovel, unfit for a dog at home, seeming a palace, because of the shelter it gives.

DEER ACCOUNT — LENA DELTA.

Sept. 21st		21 lbs
22d		21
"		7
"	Bones	8
23d		11
"		11
"	Bones	7
"	"	9
"	"	22
24th		14
"	Carry	54
"	Bones	15
Two deer.	Meat clear	96
Meat and bones		65
Bones		39
	Total	200
Sept. 27th.	One deer, buck. Meat clear	98
	Neck	19
	Heart and liver	5½
	Soup bones	16½
	Ribs	28
	First meal (say)	42
	Total	209
Sept. 27th,	10 A. M., say	42
	Supper, Neck	9
	Ribs	3½
28th,	Breakfast, Neck	10
	Ribs	14
	Dinner, Ribs	10½
	Heart and liver	5½
	Supper, Bones	8¼
	Meat	7
29th,	Breakfast, Meat	7

Dinner, Meat . . .	7 lbs.
Bones . .	8
Supper, Gull soup.	
Meat . . .	7
30th, Breakfast, Meat . .	7
Dinner, Meat . . .	7

Head of a Siberian Reindeer.

CHAPTER XVIII.

THE FATAL MONTH.

October, 1881.

The Hundred and Eleventh Day. — Crossing the River. — Halting on a Bluff. — Cold Nights. — Weakness. — A Man's Track Seen. — Huts in the Distance. — Uncertainty. — Disappointment. — The Hut becomes a Mound. — Camping in the Face of the Bluff. — The Dog Killed. — A Fearful Night. — Under Cover of a Hut. — Extremity of the Party. — Speculations as to Position. — Death of Ericksen. — Burial. — Final Start Without Food save Alcohol. — Three Miles More. — The Effect of Alcohol. — Nindemann and Noros Sent Ahead for Relief. — A Spoonful of Glycerine for Supper. — Arctic Willow. — Staggering Forward. — Alexey Dies. — Death of Kaack and Lee. — No Foot Gear. — Iversen Dead. — The Last Recorded Deaths.

October 1*st*, *Saturday*. — One hundred and eleventh day, and a new month. Called all hands as soon as the cook announced boiling water, and at 6.45 had our breakfast; one half pound of deer meat and tea. Sent Nindemann and Alexey to examine main river, other men to collect wood. The doctor resumed the cutting away of poor Ericksen's toes this morning. No doubt it will have to continue until half his feet are gone, unless death ensues, or we get to some settlement. Only one toe left now. Temperature 18°.

At 7.30 Nindemann and Alexey were seen to have crossed, and I immediately sent men to carry one load over.

Left the following record: —

SATURDAY, *October* 1, 1881.

Fourteen of the officers and men of the U. S. Arctic Steamer Jeannette reached this hut on Wednesday, September 28th, and having been forced to wait for the river to freeze over, are proceeding to cross to the west side this A. M. on their journey to reach some settlement on the Lena River. We have two days' provisions, but having been fortunate enough thus far to get game in our pressing needs, we have no fear for the future.

Our party are all well, except one man, Ericksen, whose toes have been amputated in consequence of frost-bite. Other records will be found in several huts on the east side of this river, along which we have come from the northward.

[List of party.]

GEORGE W. DE LONG,
Lieutenant U. S. Navy, Commanding Expedition.

At 8.30 we made the final trip, and got our sick man over in safety. From there we proceeded until 11.20, dragging our man on the sled. Halted for dinner; one half pound meat and tea each. At one went ahead again until 5.05.

Actually under way: 8.30 to 9.15, 9.30 to 10.20, 10.30 to 11.20, 1.00 to 1.40, 1.50 to 2.10, 2.20 to 2.40, 3.00 to 3.25, 3.35 to 4.00, 4.15 to 4.35, 4.45 to 5.05. Total, 5h. 15m. At least two miles an hour. Distance made good ten to twelve miles.

And where are we? I think at the beginning of the Lena River at last. "Sagastyr" has been to us a myth. We saw two old huts at a distance, and that was all, but they were out of our reach, and the day not half gone. Kept on ice all the way, and therefore I think we were over water, but the stream was so narrow and so crooked that it never could have been a navigable water. My chart is simply useless. I must go on plodding to the southward, trusting in God to guide me

to a settlement, for I have long since realized that we are powerless to help ourselves.

A bright, calm, beautiful day. Bright sunshine to cheer us up, an icy road, and one day's rations yet. Boots frozen, of course, and balled up. No hut in sight, and we halt on a bluff to spend a cold and comfortless night. Supper one half pound meat and tea. Made a rousing fire, built a log bed, set a watch (two hours each) to keep the fire going, and at eight P. M. crawled into our blankets.

October 2d, Sunday. — I think we all slept fairly well until midnight; but from that time it was so cold and uncomfortable that sleep was out of the question. At 4.30 we were all out and in front of the fire, daylight just appearing. Ericksen kept talking in his sleep all night, and effectually kept those awake who were not already awakened by the cold.

Breakfast five A. M. One half pound meat and tea. Bright, cloudless morning. Light N. airs. At seven went ahead, following frozen water wherever we could find it, and at 9.20 I feel quite sure we have gone some distance on the main river. I think our gait was at least two miles an hour, and our time under way two hours four minutes. I call our forenoon work at least six miles: 7.00 to 7.35, 7.45 to 8.05, 8.15 to 8.30, 8.40 to 8.50, 9.20 to 9.40, 9.50 to 10.12, 10.22 to 10.40, 10.55 to 11.15. Dinner camp. 1.00 to 1.30, 1.40 to 2.00, 2.15 to 2.35, 2.45 to 3.00, 3.20 to 3.40, 3.50 to 4.05, 4.15 to 4.20.

Divine service before dinner. Dinner one half pound meat and tea. Started ahead at one P. M., and by 4.15 had completed two marching hours and made four miles. I was much bewildered by the frequent narrowing of the river to a small vein of ice, and the irregular ram-

bling way in which it ran. Frequently it led us into a sand bank or deep snow, and our floundering around was both exhaustive of energy and consumptive of time. There is no use denying it, we are pretty weak. Our food is not enough to keep up our strength, and when we lose a night's sleep we feel it keenly. I had several bad falls on the ice this afternoon which shook me up pretty badly. A freshening N. E. wind had blown the efflorescence off the ice, and left smooth, clear spots as clear as glass. Frozen boots are but poor foot gear, and besides cramping the feet, are like boots of iron in walking. Slip, slide, and down you are on your back.

At 4.05 P. M. I saw more wood than we had sighted since our dinner camp, and but little ahead. I therefore called a halt and "camped," *i. e.*, sat down, made a fire and got supper. Then we stood by for a second cold and wretched night. There was so much wind that we had to put our tent halves up for a screen, and sit shivering in our half blankets.

October 3d, Monday. — One hundred and thirteenth day. At midnight it was so fearfully cold and wretched that I served out tea to all hands, and on that we managed to struggle along until five A. M., when we ate our last deer meat and had more tea. Our remaining food now consists of four fourteenths pounds pemmican each, and a half-starved dog. May God again incline unto our aid. How much farther we have to go before reaching a shelter or a settlement, He alone knows.

Brisk wind. Ericksen seems failing. He is weak and tremulous, and the moment he closes his eyes talks incessantly in Danish, German, and English. No one could sleep even if our other surroundings permitted.

For some cause my watch stopped at 10.45 last night while one of the men on watch had it. I set it as near as I could come to the time by guessing, and we must run by that until I can do better. Sun rose yesterday morning at 6.40 by the watch when running all right: 7.05 to 7.40 (35 m.), 7.50 to 8.20 (30 m.), 8.30 to 9.00 (30 m.), 9.15 to 9.35 (20 m.), 9.50 to 10.10 (20 m.), 10.25 to 10.40 (15 m.), 11.00 to 11.20, 11.30 to 11.50, 11.50 dinner — 1 h. 55 m. — 2 h. 35 m., say five miles.

Our forenoon's walk I put as above at five miles. Some time and distance was lost by crossing the river upon seeing numerous fox-traps. A man's track was also seen in the snow, bound south, and we followed it until it crossed the river to the west bank again. Here we were obliged to go back in our tracks, for the river was open in places, and we could not follow the man's track direct. Another of the dozen shoals which infest the river swung us off to the eastward, too, and I hastened to get on the west bank again, reaching there at 11.50 for dinner. Our last four fourteenths pound pemmican

At 1.40 got under way again and made a long fleet until 2.20. While at the other side of the river Alexey said he saw a hut, and during our dinner camp he again saw it. Under our circumstances my desire was to get to it as speedily as possible. As Alexey pointed out it was on the left bank of the river of which we were now on the right side looking south. But a sand bank gave us excellent walking for a mile, until we took to the river ice and got across it diagonally. Here, at 2.20, I called a rest, and Alexey mounted the bluff to take a look again. He now announced that he saw a second hut about one and a quarter miles

back from the coast, the first hut being about the same distance south and on the edge of the bluff. The heavy dragging across country of a sick man on a sled made me incline to the hut on the shore, since, as the distance was about the same, we could get over the ice in one third of the time. Nindemann, who climbed the bluff, while he saw that the object inland was a hut, was not so confident about the one on the shore. Alexey, however, was quite positive, and not seeing very well myself I unfortunately took his eyes as best and ordered an advance along the river to the southward. Away we went, Nindemann and Alexey leading, and had progressed about a mile when, splash! in I went through the ice up to my shoulders before my knapsack brought me up. While I was crawling out, in went Görtz to his neck about fifty yards behind me, and behind him in went Mr. Collins to his waist. Here was a time. The moment we came out of the water we were one sheet of ice, and danger of frost-bite was imminent. Along we hobbled, however, until we came, at 3.45, abreast the point on which the hut was seen. Here Nindemann climbed the bluff, followed by the doctor. At first the cry was, "All right, come ahead," but no sooner were we all up than Nindemann shouted, "There is no hut here." To my dismay and alarm nothing but a large mound of earth was to be seen. which, from its regular shape and singular position would seem to have been built artificially for a beacon; so sure was Nindemann that it was a hut that he went all around it looking for a door, and then climbed on top to look for a hole in the roof. But of no avail. It was nothing but a mound of earth. Sick at heart I ordered a camp to be made in a hole in the bluff face, and soon before a roaring fire we were dry-

ing (and burning) our clothes, while the cold wind ate into our backs.

And now for supper! Nothing remained but the dog. I therefore ordered him killed and dressed by Iversen, and soon after a kind of stew was made of such parts as could not be carried, of which everybody except the doctor and myself eagerly partook. To us two it was a nauseating mess and — but why go on with such a disagreeable subject. I had the remainder weighed, and I am quite sure we had twenty-seven pounds. The animal was fat and — as he had been fed on pemmican — presumably clean, but —

Immediately upon halting I had sent off Alexey with his gun toward the hut inland, to determine whether that was a myth like our present one. He returned about dark, certain that it was a large hut, for he had been inside of it, and had found some deer meat, scraps, and bones. For a moment I was tempted to start everybody for it, but Alexey was by no means sure he could find it in the dark, and if we lost our way we should be worse off than before. We accordingly prepared to make the best of it where we were.

We three wet people were burning and steaming before the fire. Collins and Görtz had taken some alcohol, but I could not get it down. Cold, wet, with a raw N. W. wind impossible to avoid or screen, our future was a wretched, dreary night. Ericksen soon became delirious, and his talking was a horrible accompaniment to the wretchedness of our surroundings. Warm we could not get, and getting dry seemed out of the question. Nearly everybody seemed dazed and stupefied, and I feared that some of us would perish during the night. How cold it was I do not know, for my last thermometer was broken in my many falls on the

ice, but I think it must have been below zero. A watch was set to keep the fire going and we huddled around it, and thus our third night without sleep was passed. If Alexey had not wrapped his sealskin around me and sat down alongside of me to keep me warm by the heat of his body, I think I should have frozen to death. As it was I steamed, and shivered, and shook. Ericksen's groans and rambling talk rang out on the night air, and such a dreary, wretched night I hope I shall never see again.

October 4th, Tuesday. — One hundred and fourteenth day. At the first approach of daylight we all began to move around, and the cook was set to work making tea. The doctor now made the unpleasant discovery that during the night Ericksen had got his gloves off and that now his hands were frozen. Men were at once set to work rubbing them, and by six A. M. we had so far restored circulation as to risk moving the man. Each one had hastily swallowed a cup of tea, and got his load in readiness. Ericksen was quite unconscious, and we lashed him on the sled. A S. W. gale was blowing, and the sensation of cold was intense; but at six A. M. we started, made a forced fleet of it, and at eight A. M. had got the man and ourselves, thank God, under the cover of a hut large enough to hold us. Here we at once made a fire, and for the first time since Saturday morning last got warm.

The doctor at once examined Ericksen and found him very low indeed. His pulse was very feeble, he was quite unconscious, and under the shock of the exposure of the past night he was sinking very fast. Fears were entertained that he might not last many hours, and I therefore called upon every one to join with me in reading the prayers for a sick person before

we sought any rest for ourselves. This was done in a quiet and reverent manner, though I fear my broken utterances made but little of the service audible. Then setting a watch we all, except Alexey, laid down to sleep at ten A. M. Alexey went off to hunt, but returned at noon wet, having broken through the ice and fallen in the river.

At six P. M. all roused up, and I considered it necessary to think of some food for my party. Half a pound of dog was fried for each one and a cup of tea given, and that constituted our day's food. But we were so grateful that we were not exposed to the merciless S. W. gale that tore around us that we did not mind short rations.

October 5th, Wednesday. — One hundred and fifteenth day. The cook commenced at 7.30 to get tea, made from yesterday's tea leaves. Nothing can be served out to eat until evening. One half pound dog per day is our food until some relief is afforded us. Alexey went off hunting again at nine, and I set the men to work collecting light sticks enough to make a flooring for the house, for the frozen ground thawing under everybody has kept them damp and wet and robbed them of much sleep.

S. W. gale continues. Mortification has set in in Ericksen's leg and he is sinking. Amputation would be of no use, for he would probably die under the operation. He is partially conscious. At twelve Alexey came back, having seen nothing. He crossed the river this time, but unable longer to face the cold gale was obliged to return.

I am of the opinion that we are on Tit Ary Island, on its eastern side, and about twenty-five miles from Ku Mark Surka, which I take to be a settlement. This

is a last hope, for our Sagastyr has long since faded away. The hut in which we are is quite new, and clearly not the astronomical station marked on my chart. In fact this hut is not finished, having no door and no porch. It may be intended for a summer hut, though the numerous set fox-traps would lead me to suppose that it would occasionally be visited at other times. Upon this last chance and one other seem to rest all our hopes of escape, for I can see nothing more to be done. As soon as this gale abates I shall send Nindemann and one other man to make a forced march to Ku Mark Surka for relief. At six P. M. served out one half pound of dog meat and second-hand tea, and then went to sleep.

October 6th, Thursday. — One hundred and sixteenth day. Called all hands at 7.30. Had a cup of third-hand tea with one half ounce of alcohol in it. Everybody very weak. Gale moderating somewhat. Sent Alexey out to hunt. Shall start Nindemann and Noros at noon to make the forced march to Ku Mark Surka. At 8.45 A. M. our messmate Ericksen departed this life. Addressed a few words of cheer and comfort to the men. Alexey came back empty-handed. Too much drifting snow. What in God's name is going to become of us, — fourteen pounds dog meat left, and twenty-five miles to a possible settlement? As to burying Ericksen, I cannot dig a grave, for the ground is frozen and we have nothing to dig with. There is nothing to do but to bury him in the river. Sewed him up in the flaps of the tent, and covered him with my flag. Got tea ready, and with one half ounce alcohol we will try to make out to bury him. But we are all so weak that I do not see how we are going to move.

At 12.40 P. M. read the burial service and carried our

departed shipmate's body down to the river, where, a hole having been cut in the ice, he was buried; three volleys from our two Remingtons being fired over him as a funeral honor.

A board was prepared with this cut on it: —

IN MEMORY

H. H. ERICKSEN,

OCT. 6, 1881.

U. S. S. Jeannette.

and this will be stuck in the river bank abreast his grave.

His clothing was divided up among his messmates. Iversen has his Bible and a lock of his hair. Kaack has a lock of his hair.

Supper at five P. M. — one half pound dog meat and tea.

October 7th, Friday.— One hundred and seventeenth day. Breakfast, consisting of our last one half pound dog meat and tea. Our last grain of tea was put in the kettle this morning, and we are now about to undertake our journey of twenty-five miles with some old tea-leaves and two quarts alcohol. However, I trust in God, and I believe that He who has fed us thus far will not suffer us to die of want now.

Commenced preparations for departure at 7.10. Our Winchester rifle being out of order is, with one hundred and sixty-one rounds ammunition, left behind. We have with us two Remingtons and two hundred and forty-three rounds ammunition. Left the following record in the hut: —

FRIDAY, *October* 7, 1881.

The undermentioned officers and men of the late U. S. Steamer Jeannette are leaving here this morning to make a

forced march to Ku Mark Surka, or some other settlement on the Lena River. We reached here on Tuesday, October 4th, with a disabled comrade, H. H. Ericksen (seaman), who died yesterday morning, and was buried in the river at noon. His death resulted from frost-bite and exhaustion, due to consequent exposure. The rest of us are well, but have no provisions left — having eaten our last this morning.

Under way at 8.30 and proceeded until 11.20, by which time we had made about three miles. Here we were all pretty well done up, and, moreover, seemed to be wandering in a labyrinth. A large lump of wood swept in by an eddy seemed to be a likely place to get hot water, and I halted the party. For dinner we had one ounce alcohol in a pot of tea. Then went ahead, and soon struck what seemed like the river again. Here four of us broke through the ice in trying to cross, and fearing frost-bite I had a fire built on the west bank to dry us. Sent Alexey off meanwhile to look for food, directing him not to go far nor to stay long; but at 3.30 he had not returned, nor was he in sight. Light S. W. breeze, hazy; mountains in sight to southward.

At 5.30 Alexey returned with one ptarmigan, of which we made soup, and with one half ounce alcohol had our supper. Then crawled under our blankets for a sleep. Light W. breeze; full moon; starlight. Not very cold. Alexey saw river a mile wide with no ice in it.

October 8th, Saturday. — One hundred and eighteenth day. Called all hands at 5.30. Breakfast, one ounce alcohol in a pint of hot water. Doctor's note: Alcohol proves of great advantage; keeps off craving for food, preventing gnawing at stomach, and has kept up the strength of the men, as given, — three ounces

NINDEMANN AND NOROS IN SEARCH OF HELP.

per day as estimated, and in accordance with Dr. Anstie's experiments.

Went ahead until 10.30; one ounce alcohol 6.30 to 10.30; five miles; struck big river; 11.30 ahead again; sand bank. Meet small river. Have to turn back. Halt at five. Only made advance one mile more. Hard luck. Snow; S. S. E. wind. Cold camp; but little wood; one half ounce alcohol.

October 9th, Sunday. — One hundred and nineteenth day. All hands at 4.30 one ounce alcohol. Read divine service. Send Nindemann and Noros ahead for relief; they carry their blankets, one rifle, forty rounds ammunition, two ounces alcohol. Orders to keep west bank of river until they reach settlement. They started at seven; cheered them. Under way at eight. Crossed creek. Broke through ice. All wet up to knees. Stopped and built fires. Dried clothes. Under way again at 10.30. Lee breaking down. At one strike river bank. Halt for dinner, — one ounce alcohol. Alexey shot three ptarmigans. Made soup. We are following Nindemann's track, though he is long since out of sight. Under way at 3.30. High bluff. Ice running rapidly to northward in river. Halt at 4.40 upon coming to wood. Find canoe. Lay our heads on it and go to sleep; one half ounce alcohol for supper.

October 10th, Monday. — One hundred and twentieth day. Last half ounce alcohol at 5.30; at 6.30 send Alexey off to look for ptarmigan. Eat deerskin scraps. Yesterday morning ate my deerskin foot-nips. Light S. S. E. airs. Not very cold. Under way at eight. In crossing creek three of us got wet. Built fire and dried out. Ahead again until eleven. Used up. Built fire. Made a drink out of the tea-leaves from alcohol bottle. On again at noon. Fresh S. S. W. wind, drift-

ing snow, very hard going. Lee begging to be left. Some little beach, and then long stretches of high bank. Ptarmigan tracks plentiful. Following Nindemann's tracks. At three halted, used up; crawled into a hole in the bank, collected wood and built fire. Alexey away in quest of game. Nothing for supper except a spoonful of glycerine. All hands weak and feeble, but cheerful. God help us.

October 11th, Tuesday. — One hundred and twenty-first day. S. W. gale with snow. Unable to move. No game. One spoonful glycerine and hot water for food. No more wood in our vicinity.

October 12th, Wednesday. — One hundred and twenty-second day. Breakfast; last spoonful glycerine and hot water. For dinner we tried a couple of handfuls of Arctic willow in a pot of water and drank the infusion. Everybody getting weaker and weaker. Hardly strength to get fire-wood. S. W. gale with snow.

October 13th, Thursday. — One hundred and twenty-third day. Willow tea. Strong S. W. wind. No news from Nindemann. We are in the hands of God, and unless He intervenes we are lost. We cannot move against the wind, and staying here means starvation. Afternoon went ahead for a mile, crossing either another river or a bend in the big one. After crossing, missed Lee. Went down in a hole in the bank and camped. Sent back for Lee. He had turned back, lain down, and was waiting to die. All united in saying Lord's Prayer and Creed after supper. Living gale of wind. Horrible night.

October 14th, Friday. — One hundred and twenty-fourth day. Breakfast, willow tea. Dinner, one half teaspoonful sweet oil and willow tea. Alexey shot one ptarmigan. Had soup. S. W. wind, moderating.

October 15*th, Saturday.* — One hundred and twenty-fifth day. Breakfast, willow tea and two old boots. Conclude to move on at sunrise. Alexey breaks down, also Lee. Come to empty grain raft. Halt and camp. Signs of smoke at twilight to southward.

October 16*th, Sunday.* — One hundred and twenty-sixth day. Alexey broken down. Divine service.

October 17*th, Monday.* — One hundred and twenty-seventh day. Alexey dying. Doctor baptized him. Read prayers for sick. Mr. Collins' birthday — forty years old. About sunset Alexey died. Exhaustion from starvation. Covered him with ensign and laid him in the crib.

October 18*th, Tuesday.* — One hundred and twenty-eighth day. Calm and mild, snow falling. Buried Alexey in the afternoon. Laid him on the ice of the river, and covered him over with slabs of ice.

October 19*th, Wednesday.* — One hundred and twenty-ninth day. Cutting up tent to make foot gear. Doctor went ahead to find new camp. Shifted by dark.

October 20*th, Thursday.* — One hundred and thirtieth day. Bright and sunny, but very cold. Lee and Kaack done up.

October 21*st, Friday.* — One hundred and thirty-first day. Kaack was found dead about midnight between the doctor and myself. Lee died about noon. Read prayers for sick when we found he was going.

October 22*d, Saturday.* — One hundred and thirty-second day. Too weak to carry the bodies of Lee and Kaack out on the ice. The doctor, Collins, and I carried them around the corner out of sight. Then my eye closed up.

October 23*d, Sunday.* — One hundred and thirty-third day. Everybody pretty weak. Slept or rested all day,

Friday October 21

131st day. Kaack was found dead about midnight between the Doctor and myself—

Lee died about noon—

Read prayers for sick when he found he was going.

Saturday October 22nd

132d day. Too weak to carry the bodies of Lee and Kaack out on the ice. The Doctor, Collins and I carried them around the corner out of sight. Then my eye closed up.

Sunday October 23d

133d day. Everybody pretty weak. Slept or rested all day and then managed to get enough wood in before dark. Read part of of Divine Service. Suffering in our feet — No foot gear.

Monday October 24th

134th day. A hard night.

Tuesday October 25th
135th day.
Wednesday October 26th
136th day.

Thursday October 27th.
137th day. Iverson broken down

Friday October 28th.
138th day. Iverson died during early morning.

Saturday Oct 29.
139th day. Dressler died during night

Sunday Oct 30.
140th day. Boyd & Gertz died during night. Mr Collins dying

FAC-SIMILE OF LAST PAGE IN JOURNAL OF LIEUTENANT-COMMANDER GEO. W. DE LONG.

and then managed to get enough wood in before dark. Read part of divine service. Suffering in our feet. No foot gear.

October 24*th, Monday.* — One hundred and thirty-fourth day. A hard night.

October 25*th, Tuesday.* — One hundred and thirty-fifth day.

October 26*th, Wednesday.* — One hundred and thirty-sixth day.

October 27*th, Thursday.* — One hundred and thirty-seventh day. Iversen broken down.

October 28*th, Friday.* — One hundred and thirty-eighth day. Iversen died during early morning.

October 29*th, Saturday.* — One hundred and thirty-ninth day. Dressler died during night.

October 30*th, Sunday.* — One hundred and fortieth day. Boyd and Görtz died during night. Mr. Collins dying.

Captain De Long's Note-Books and Map.

CHAPTER XIX.

NINDEMANN AND NOROS.

9 *October* — 2 *November*, 1881.

Captain De Long's Instructions. — They start on their Forced March to the Southward. — They shoot a Ptarmigan and miss Deer. — Arctic Willow Tea and Boot-soles. — Camping in the Snow. — Loss of Alcohol. — A Hut. — Refuge from the Storm. — Struggling against the Wind. — Crossing Streams. — Another Hut, and a Burial Place. — Camping in a Crevice. — Reduced to Seal-skin from Pantaloons. — Making for the Mountains. — Miserable Shelter. — A Deserted Settlement. — A Needed Refuge. — Discovered by a Native. — Carried to a Camp. — Their Journey Southward. — Impossibility of Communication. — Ku Mark Surka. — Bulun. — The Telegraphic Message. — The Appearance of Chief-Engineer Melville.

THE brief record in which Captain De Long recites the experience of his party after landing upon the coast is so calm and reserved, that the reader may easily fail to recognize some of the extreme hardships which were endured, and the difficulties which assailed the men. So weak were they after their terrible exposure in the boat that they could not raise their legs to break through the young ice when wading to the shore, but were compelled to push through it as they moved feebly along. The land moreover on which they landed was a vast morass, which afforded no sure foothold. When the weather was mild the surface was spongy and wet; when the frost seized the ground, or snow fell, the walk-

ing was equally hard. The men slipped at every step, so that every mile they made was doubled in exertion.

Their track moreover was made in great uncertainty. No chart had been laid down of this desolate region, and indeed it would seem impossible to make any which would not be falsified by the changes which every fresh season brought. The fullest chart laid down only eight mouths to the Delta, but two hundred and ten have been counted by those who traversed the coast in the searches which followed the fateful voyage of the Jeannette. All the low land of the Delta is yearly covered with ice and water when the rivers break up, and the whole country is ploughed by the swollen streams of the Lena as they make their way to the ocean. Thus the courses of the streams are never the same in two years, and the countless branches bewilder the traveler. It was this that caused Captain De Long and his party to move more and more to the eastward, and become entangled in the wilderness.

When Captain De Long ordered the two seamen, Nindemann and Noros, on the morning of Sunday, October 9, to make a forced march to the southward to Ku Mark Surka for relief, he gave to Nindemann a copy of the chart by which he was working, and pointed out the spot, the island of Tit Ary, where he supposed himself and his party then to be. He encouraged the men by showing that there was only one river to be crossed, and that the village was but twelve miles distant. He hoped they could reach it in three or four days. In reality, Tit Ary itself was near the point where the two seamen fell in with natives a fortnight later, after traveling nearly a hundred and twenty miles, and Ku Mark Surka lay thirty-three miles beyond that. The insufficiency of the chart which Captain De Long had,

the latest accessible at the time of his leaving San Francisco, will be at once apparent by a comparison of it with the chart laid down after the Lena Delta had been traversed by the several parties. It is by this fuller chart that one learns for the first time how near was a settlement of natives to the point where the first cutter landed, a fact upon which Captain De Long's chart was silent as the grave, and which was unknown even to the Russian government.

The instructions which Captain De Long gave to Nindemann were not written. He bade him keep on the west bank of the river, since he would not find drift-wood on the east bank, and would not be likely to fall in there with natives. He cautioned him to avoid wading, but rather to walk round water when he could. The two men were lightened of all burdens, were furnished with a rifle, forty rounds of ammunition, and two ounces of alcohol. When they were ready to start at seven o'clock, they shook hands with everybody, the party which remained behind gave them three cheers, and they set forth on their desperate march.

They moved along the bank of the creek to the westward until they could find a place where they could cross. The young ice at the edge could not bear their weight, and they were forced to find pieces of timber with which they could make a rude footway to the stronger ice; upon the other side the ice at the edge broke under them, but the water was shallow. About two hundred yards to the south they came to the larger stream which they were to follow, and found the river open, and the ice running in it. They kept along the bank until about noon, when they saw a ptarmigan upon what appeared like a heavy piece of drift-wood. Nindemann fired and shot his tail-feathers out, but the

bird flew away. The drift-wood turned out to be a kayak turned bottom up. They broke it out of the snow, but found nothing under it, and resumed their journey.

When they halted half an hour later, and gathered some bits of wood for a fire, eight or ten ptarmigans appeared within about fifty yards of them. Nindemann took the rifle and crawled half the distance, when he had three or four in line. He fired and brought down one only, which they cooked as well as they could, and made their dinner off it, but the bird is only about as large as a pigeon and has but little meat on it.

The river ran past a low bluff, and the two men as they made their way along the bank sometimes tried the top of the bank, but were hindered by the deep, soft snow, and sometimes the edge of the river, where the walking was better, except where the bank left no room for passage. About three o'clock they came upon another stream flowing in from the west, and followed its northern bank for a mile, until they could come to a good crossing, when they got upon the other bank and regained the main stream. An hour later they came upon a big flat boat shoved up on the beach, but so broken up that it was unfit for use. It was the grain raft which Captain De Long noted on the 15th. Here they took a short rest and then started on again. A little before dark they saw something to the westward, which, in the uncertain light, they took to be huts. As they came nearer, the objects began to move, and they saw that they were deer. Nindemann went cautiously toward them until he came within a thousand yards; some of the deer were lying down, and some were browsing. He got down upon his hands and knees and crawled within three hundred yards, but the wind was

from his quarter, and they scented him and began to run. He fired three or four shots after them but without effect, and they fled westward, while he stood watching them till they were out of sight.

Back he went to his disappointed companion, and they started again southward, walking until it was quite dark. The wind was blowing, and they camped down on a point of land where a large bay made in to the westward. It was the confluence of several streams,

W. F. C. Nindemann.

and just beyond where, a week later, Captain De Long and his party made their last camp. The two men collected wood for a fire; and making a little Arctic willow tea and soaking and burning a boot-sole, they got what nourishment they could, made bags of their blankets, and crawling near the fire lay down for the night. Now and then, as the cold penetrated, one or the other would rouse himself, lay a little more wood on the fire, and lie down again.

On the morning of Monday, October 10th, they had a little willow tea and another boot-sole, and then started along the bank to the westward, and again to the southwest. They were aiming to keep a southerly course on the west bank of the main stream, but they were in a confused morass, with points of land here and there, which they tried to reach. The wind was high, and the drifting snow filled the air, so that sometimes they could not see fifty yards beyond them. When there was a lull they would get their bearings, but as they went from point to point, they were constantly compelled to cross streams, wading through the water to a sand spit beyond, only to find another stream beyond that. Thus they struggled on all day, from nine o'clock till nearly dark, making a course which was sometimes northwest and sometimes west. The wind was still so high when they halted for the night, that though they found drift-wood, they were unable to light and keep a fire. So, walking till they came to a bank of the river where there was a deep snow-drift, they set to work to scoop out a hole into which they could crawl for shelter. They had no tools but their sheath-knives, and it was midnight before their task was done. Then they crawled in, nearly closed the hole behind them to keep the snow from drifting in, and rolled themselves in their blankets. There they lay the night through, but they were wet to their waists, and had to keep the blood in circulation by knocking their feet together. One would sleep for five minutes, and then be waked by the other and bidden keep from freezing by knocking his feet together.

When morning came it was with difficulty that they could extricate themselves from the hole which they had dug, for the snow had been piled up by the wind against the opening. Once on their feet again, they

found better weather and little of the drifting snow. It was Tuesday, October 11th, and they pushed on southward until midday, when they kindled a fire, meaning to warm a little of the alcohol which they carried; but Noros, who had carried the bottle in his pocket, put his hand in to find that the bottle was broken, and the alcohol gone. They had recourse to the Arctic willow tea and boot-sole, and took up their march again. Toward evening, as they stood on the river bank, they sighted something beyond them which looked like a hut, and after crossing a couple of streams they came up to it, and hailed it as a refuge after that terrible thirty-six hours.

They gathered wood for a fire which they made, and searched the hut, but found nothing save some deer bones, which they threw upon the fire and burned and then made effort to eat along with their willow tea. They dried their wet clothes before the fire, and at length lay down and slept. They were under shelter, and when they looked out the next morning, it was blowing a gale from the southwest, and nothing could be seen but the wild, drifting snow. All day, therefore, they lay in their refuge, seeking again for nourishment from the willow tea and the charred bones.

On the morning of Thursday, the 13th, the weather was clearer, but it was still blowing, and they could get no certain view of where they were going. They were apparently on an island between two streams. The river to the west of them was open to the southward and westward; that to the southward and eastward was open on the south side, with three hills lying there. They kept along the island through the morning, sitting down often to rest, for they were facing the strong wind and it was hard work. It was on this

day that Captain De Long wrote in his journal: "No news from Nindemann. We are in the hands of God, and unless He intervenes[1] are lost. We cannot move against the wind." Nindemann himself was slowly passing the point where he was later to help bury his captain.

In the afternoon they sighted a hut on the west bank of the river. They had seen one in the morning, but had in vain attempted to cross the ice to it. Now they tried to reach this, but were turned back by the brittle ice. They kept it in sight, as they moved southward, and made another attempt to cross the ice, but it broke and they came back. Then they saw that there was no further progress possible to the southward on that side of the water, and they returned to the ice. It broke again, but they kept on. They went in to their waists, but managed to pull themselves up on the stronger ice. The wind was blowing against them, and the ice was a glare, so that they were driven back. They looked about for ice which had been roughened by the ripples beneath, and finding some they succeeded at length in reaching the other side, where were two wooden crosses beneath a bank, which rose fifty feet above them.

They pulled themselves up the bank, but when they came to the hut which they had kept in sight, they found it a ruin nearly full of snow. While Noros was trying to make a place in it for shelter Nindemann saw a black object farther along to the south and went to it. It was a small peaked hut without a door,

[1] By an error this word in some copies of Captain De Long's journal has been made *relents*. Not so did Captain De Long read the Divine mind. To him God was no vindictive, stern tyrant. The records sufficiently witness to his devout, unswerving confidence in a watchful Father.

but large enough to hold the two men. There were some fresh wood shavings outside the hut, and higher up on the hill two boxes. On going to them Nindemann found them old and decayed, and he began to break one of them open. When he had ripped off the top he discovered that there was another box inclosed; breaking into it he found a dead body, and hastily left it. Doubtless the two crosses below on the river bank were memorials of the two beings left high up above the reach of the floods.

Nindemann went back to Noros, and told him what he had seen, and that they would find shelter in the little hut. So they began to gather wood for their fire, and Nindemann came upon five or six pieces of timber lying close together frozen to the ground. He got a stick, pried them loose, and left them for use in the fire, as they were near to the hut, and went off for more drift-wood. Noros, meanwhile coming up, began to move the timbers, when he found that they covered a hole in which lay a box, half filled with the earth which had fallen into it. Upon dragging it out, he discovered in it a couple of fish and one or two fish heads. He made known his prize, and Nindemann coming forward seized upon a lemming, which at that moment came out of his hole. They went to the hut and made a fire. Their supper was some willow tea, the lemming and the fish. They could not dress the lemming, but made a spit of their ramrod and roasted the little animal which they divided between them. The fish were decayed and dropped apart as they handled them, but they found a couple of flat stones and so cooked the fish on these before the fire. Supper over, they closed the opening of the hut with a couple of boards, and lay down by the fire to dry their clothes and sleep till morning.

When morning came it was still blowing hard from the southward, and though they made a start, they found it impossible to make any headway, nor could they see their way through the driving snow, so they turned back to the little hut and stayed there another twenty-four hours, eating what scraps they could gather, and carefully husbanding the little wood which remained to them.

When they looked out Saturday morning, the 15th, the wind was still blowing from the southeast, but the snow had stopped drifting. They made a start along the river bank to the southward and eastward, looking for the main river. They crossed an island and saw signs of natives having been there, and coming upon the river again they struggled over the ice, facing the wind, which was now rising and increasing in strength. About five o'clock in the afternoon they discovered an opening in the river bank, and since the moving was now very hard they thought to make a halt there, but the wind drew through the crack and so they kept on by the bank, hoping for better shelter. They found nothing and had finally to turn back and put up with this fissure. It was a kind of cave extending into the bank, and having another opening at the top. They gathered wood enough to last for the night. One would get into the crack while the other passed in the wood to him.

They found some Arctic willow, but they had nothing to eat, and so Nindemann, who wore a pair of sealskin pantaloons, cut off a piece, which they soaked in water and then burned to a crust. From this they made out their supper, but though they had a good fire they shivered with the draught which the wind made through the funnel-shaped cave. They tried to

cover the opening with one of their blankets, but it was not long enough. There was not room for both below the fire, so they took turns, one crawling up above and lying upon his face to avoid the smoke, but this was so penetrating that it was impossible for him to stay, and he would shift with his companion. There was little sleep to be had, and little warmth, and they watched for the morning. Possibly it was the smoke from this fire which Captain De Long descried as he lay in his camp to the north.

A little before daylight on Sunday morning, the 16th, the wind moderated, and the snow was drifting less. They were impatient to get away from their miserable shelter, and taking a little more willow tea and seal-skin they started on their march to the southward and eastward in search of the main river, which they believed to flow by the high land which they could see in that direction. They crossed the stream by which they were, and got upon some sand spits where were heavy hummocks of ice. The wind had increased again. They tried to rest in the lee of the hummocks, but the wind was searching and struck through their imperfect clothing, so they struggled on until they reached a large sand bank and saw that the high hills toward which they had been aiming appeared to be about three miles distant. They could see no river, however, and began to fear they must have crossed the main stream. But they resolved to push on to the foot of the hills, and then if they failed to find the river to turn back and take a westward course.

Following the sand spit on which they had halted they soon came to the river. Their orders had been to keep on the west bank, but there seemed to be noth-

ing but sand spits about them, with no chance of game. Moreover they had just seen a crow flying overhead. across the river and in among the hills. The crow, in the Arctic regions, keeps among human beings, and this decided Nindemann to cross the river in hopes of reaching some natives on the other side, or some game. They had to move with caution, for there were large open places in the ice. When part way across Noros complained of illness. He had been spitting blood twice. Nindemann, who could move more quickly, bade him follow, while he kept on to the foot of the hills. When he reached the edge of the river there was nothing to be seen. The hills thrust themselves into the river so that they had to take to the ice; and so, sometimes on the shore, sometimes on the river, they kept on their way, but could see no signs either of game or of natives.

At length at dark they came to a ravine in the hills, where they gathered some drift-wood for a fire, and finding no Arctic willow they were driven to taking a little hot water and eating again of the seal-skin. They could discover no shelter, and so they dug a hole in the snow, piled up some blocks of snow to keep off the wind as well as they could, and crawled into their blanket bags. They could not sleep, and would gladly have risen and pushed on, but the night was too dark for them to see their way.

At dawn of Monday, the 17th, they started down the ravine again and followed the river bank to the south, making but slow progress, so rough was the walking. They halted in the middle of the forenoon, made a fire and boiled some water which they took with their seal-skin; they stayed there an hour, trying to mend in a fashion the soles of their boots, which

were badly worn. When they had gone a mile further they abandoned the east bank and recrossed the river. The wind was now blowing and the snow was driving, but for the rest of the day they struggled onward until they came to some hillocks, which appeared to be piles of snow and sand. They tried to dig into them for shelter, but found hard ice below. Again moving on they came to some drift-wood, where they hoped to find a piece large enough to afford some shelter, but in vain. They kept crossing streams and sand spits, and it was midnight before they finally struck a solid river bank. There was drift-wood there for a fire, but the wind was too high to suffer them to light it, and so they had recourse to their expedient of the former night, and dug a hole in the snow, sheltering themselves as best they could by a barrier of snow-blocks.

It was too cold to sleep, and they started again at daybreak, Tuesday, the 18th, along the river bank to the southward. They were now on the west bank of the main stream, but found it easier at times to move on the ice-bed of the river. Now and then they would climb the bank above them to see what lay before them, but the moss and snow there were so deep that they sank to their knees at every step. They halted at ten, when they made a fire, partook of willow tea and seal-skin, but at six o'clock, when they had climbed the bank, they saw a hut about a mile inland. They walked to it and found it a peaked hut, without a door, and almost snowed over. A hundred yards farther on they saw a pile of something which proved to be sleds. There was no drift-wood near by, so they broke up the sleds and used them for fire-wood. They dug out enough snow from the hut to give them sleeping room, and after staying themselves with willow tea and seal-

skin, they lay down for the night. They were weak, but they were within shelter. They had had no real shelter and no sleep since Friday night, and thus from sheer exhaustion and with this slight comfort they slept all night.

When they woke on the morning of Wednesday, the 19th, it was broad daylight. They made themselves

Louis P. Noros,

some tea, and started southward, weak and stumbling. Till three o'clock in the afternoon they struggled on. They came then to a high cliff, where they saw an owl flying. They watched, hoping the owl would rest and they could bring her down, but she kept flying in a circle, and finally flew over the cliff beyond their hope. They were so exhausted now that they could scarcely move for more than five minutes at a time. They began to regret the hut they had left behind them. There at least they would have had shelter. About

four o'clock, as they stumbled on, they came to a small river running across their line of travel. They reached the other bank when Noros looking back discovered three huts on the bank they had left. It was the place set down on later maps as Bulcour. They recrossed the stream, and on making their way to the huts found in one of them a kayak with some fish-nets and other articles. Near by was a half kayak with something in it. Noros tasted it. It was like sawdust. Nindemann also tasted it. It was blue molded and tasteless to them, but it was fish, and they took it with them to the other huts. They found nothing more, and after gathering some drift-wood they made a fire and tried to find some food in the moldy fish.

They slept by the fire they had made, and Thursday they gathered a little wood. They knew how weak they were when they were gathering it, though when they sat by the fire they thought themselves strong enough to move on. But they stayed by the hut all day. Dysentery had attacked them and their strength seemed failing.

When Friday, the 21st, came, they thought they would make a start, but were so weak that they put off the attempt till the morrow, and spent the day in a careful husbanding of their resources. They measured in their tin cups the fish that was left, and found that by taking each two cupfuls a day they had enough for ten days. Nothing else remained to them but a skull-cap apiece, and a pair of foot-nips. These they proceeded to fill with fish and sew up, and then rigged them with straps for carrying.

On the morning of Saturday, the 22d, Nindemann was ready to make a fresh start, but Noros said, "We are pretty weak yet, and as the weather is cold we had

better rest another day;" and Nindemann, in his narrative adds, "By this time our dysentery was so bad that it was almost impossible for us to start, and I think that if we had started, we should have frozen by the way." So they kept in the hut and worked at their boots, which were falling to pieces.

At noon, as they were seated by the fire, trying to get a meal ready, they heard a noise outside like a flock of geese sweeping by. Nindemann looked through the crack of the door, and saw something moving which he took to be a reindeer. He took the rifle down, loaded it, and was moving forward, when the door opened, and a man stood at the entrance. Seeing Nindemann advancing toward him with his rifle, he fell on his knees, throwing up his hands, and began to supplicate him. Nindemann threw the rifle into the corner and beckoned eagerly to the man to come in. At first the man was fearful, but finally came in, and the two men, wishing to show that they were friends, offered him some of the fish they were cooking. The man shook his head and made signs that it was not fit to eat. He had come in a sleigh with reindeer, and the men went out to see what he had. He had nothing in his sleigh to eat, but Nindemann picked up a large deer-skin coat and brought it with him into the hut, and by signs offered to give the man in exchange his flannel shirt, but he shook his head. Nindemann showed him his boots, and the man went out to his sleigh and brought back a pair of deer-skin boots.

The two men now tried their best by signs, but in vain, to make the man understand the critical condition of the captain and their shipmates; he only made signs in return that he must go and that he needed his coat, for it was very cold. He brought in a deer-skin,

however, which he gave them, and then held up three or four fingers to tell them apparently that in three or four hours or three or four days, they knew not which, he would return. He took the shirt which Nindemann had offered him, drove off along the river to the westward, and was soon out of sight.

Nindemann and Noros looked at each other, when he had disappeared, and began to question if they had done wisely in letting him go off. Nindemann feared he had scared him with his rifle, and that he would not come back, but Noros was confident that he was a good Christian and would return. Nindemann finally said that they would wait four days for his return, and then, if he did not appear, they would keep on to the southward. They were too weak to think of a march now. They were too weak indeed to go down the river bank after drift-wood, and so they collected the sleds which they found, the berths in the huts, and any loose wood, and dragged these to their fire.

About six o'clock in the evening, as they were boiling some of their moldy fish, they heard a noise without, the door opened, and their visitor, with two other men, came into the hut. After a vain attempt at making each other understand anything, one of the men went out, brought in a frozen fish which he skinned and sliced; while the sailors were eating it — the first real food which they had touched for many a day — the natives made signs for them to go with them. They brought in some deer-skin coats and boots for them, gathered what was in the hut, and then putting the men into reindeer sleighs drove off with them along the river to the westward. The way led into the mountains, and they kept on their drive for about fifteen miles, when they came to a ravine where were

a couple of deer-skin tents, and fires could be seen burning.

The natives took Nindemann into one tent and Noros into the other, and gave them some boiled venison. There were seven men and three women in the party. One of the women seeing the forlorn condition in which Nindemann was offered him water to wash. He washed his hands, but they were so bent and sharp that they were more like claws than hands, and he found himself unable to wash his face, so that the woman took pity on him and washed it for him. The people gave the sailors more venison and fish, and they in their turn tried to tell their story and their errand. At first the people seemed to attend, but presently they were curious to know what the sailors had about them, and if they had any money. Nindemann tried to make them understand that they had plenty of money in the ship, that the ship had gone down, but that if the men would help them, they should have plenty. It was impossible to say how far they were understood.

It was late in the night before the people in the tents disposed themselves for sleep, and in the morning when Nindemann awoke it was daylight, and breakfast was prepared. Again he tried to make them understand his wishes, but in vain; and after breakfast, while the rest were out catching the reindeer, he found the man who seemed to be the head of the party, and drew in the snow a chart of the places where he had been, making signs all the time, sometimes thinking he was understood and then in despair. There were over a hundred head of deer which the natives harnessed to twenty-seven sleighs loaded with reindeer meat, reindeer skins, and fish, and when all was ready, they broke camp, and drove over the mountains to the southward.

At noon when they stopped to rest the deer, the man with whom Nindemann had talked led him to a point from which they could descry a prominent landmark in the Lena Delta, which he and Noros had had in sight a long while on their march. The man asked by signs if that was where they had left their people. Nindemann explained as well as he could that Captain De Long and his party were fifteen or twenty miles probably to the northward of the point. He watched the man anxiously to see what he would do, but he only shook his head as if sorry, and went back with Nindemann to the sleighs. They kept on their journey to the south, camping again at night.

Another day was spent in the same way. Occasionally when climbing a hillside, all the people would get out to lighten the load, but Nindemann and Noros were still so weak that they lagged far behind the rest, who were obliged to wait for them. About five o'clock they came to a collection of huts, the Ku Mark Surka, which had been the point which Captain De Long had hoped they would make in three or four days. Here were a number of natives looking out for the return of the party, and the two sailors were the object of great curiosity. The people crowded about them, talked to them, talked about them, and Nindemann in vain tried to make himself understood. The huts were full of people feasting, and it was soon difficult to get their attention.

"On the morning of the 25th," says Nindemann, "after breakfast, I started again talking to the people through signs and pantomime; it seemed as if one of them had got some idea of where we came from, or what we wanted, and he talked to one of the boys, and the boy went out, and after awhile came back with a model of a Yakutsk boat, and then they all got round

me and wanted to know, as near as I could make out, whether our ship was something like it. I then went to work and got some sticks and placed them in the boat, showing them that our ship had three masts, and then got more sticks, showing them that she had yards. This seemed to surprise them very much. I then made a smoke-stack out of wood, and pointed to the fire and smoke, and then showed them the place astern where the rudder was, and had a small roll which I turned to make them understand that our ship was a steamer. I then made models of the boats, and showed them how many boats the ship had. Then I told one of the men to get me a couple of pieces of ice. He went out and got me a couple of pieces of ice, and I showed them how the ice had crushed our ship. I then pointed to the northward, as much as to say, the ice crushed our ship away to the northward, and that we saved three boats, putting in each little boat so many sticks, to represent how many men there were in each boat. At the time there was a dog in the room. A man pointed to the dog and wanted to know whether we had any dogs. I counted on my fingers that we had about forty, and made them understand that we had shot the most of them, and left some of them behind on the ice. I then showed them a chart of the ocean and the coast line, showing that we had a gale of wind, and that our boat went in here, and that we did not know what had become of the other two. I then showed them on the chart where we had landed, and made the boat on the chart a little way off land, and then I showed them by pencil-marks that everybody had left the boat and waded ashore. Then showed them the way we walked along the river bank, and I marked the huts where we stopped. Here we came to the place where Ericksen

had died. I showed them through signs that he had died, and that we buried him in the river. Everybody shook his head, as much as to say they felt sorry for it. I then made them understand that we had left the captain a couple of days after that, and by putting my head down and closing my eyes, to show them how many days it had been that we had left him. This seemed to affect them pretty well, but it seemed to me as if they would not give me any assistance. Sometimes it seemed to me as if they understood everything that I wanted. Then all at once it seemed that they did not understand a word. I kept talking with those people till it must have been somewhere near twelve o'clock, but they did not show any signs by this time of any intention to give me assistance, or to do anything for me."

Another day was spent in an incessant but fruitless attempt to make themselves understood, and on Thursday morning, October 27th, Nindemann sitting alone on his berth and thinking of everything, of their terrible march, of their helpless companions, and of the hopelessness of carrying any aid to them, could contain himself no longer, and broke into sobs and groans. A woman in the hut took pity on him, and began talking earnestly to one of the men, who came to Nindemann and said something about a commandant. By this time Nindemann had picked up a few words, and he begged the man to take them on to Bulun, for he was in despair of doing anything in this place. The man in reply again said something about the commandant, and held up five or six fingers. Then he made Nindemann understand that he would take him to Bulun on the morrow.

The day passed by, and late in the evening a native

came in and told Nindemann that the commandant was coming. He was followed at once by a tall Russian whom Nindemann took to be the commandant, and eagerly accosted in English. The Russian, an exile by the name of Kusmah, could not understand him; but he evidently knew something of affairs, for he uttered two words, Jeannette, Americansk. Nindemann suddenly thought he might be some Russian officer who had had orders from his government to look out for them. He tried him in German, but the Russian shook his head. He took out the little chart which the captain had given him, and pointed out the places, but the Russian seemed to have no conception of what the chart was. Then the Russian said something, but all that Nindemann could catch was, "St. Petersburg," and "telegrams." If it was necessary to wait for a dispatch to St. Petersburg, Nindemann thought in despair, all was over, for it would be impossible to reach the captain in time.

While this confused exchange of words was going on, Noros was in the hut writing out a note which the two men had composed, and the Russian picked up the paper and put it in his pocket. They asked him for it, but he refused to give it back, and about midnight took his leave. He came back in the morning and gave them to understand that he was going to Bulun, and that they were to follow shortly. The people with whom they were had furnished them with deer-skin clothing and boots, and when preparations were made to send them on their way, the woman of the hut where Nindemann had stayed gave him some smoked fish to eat on the road.

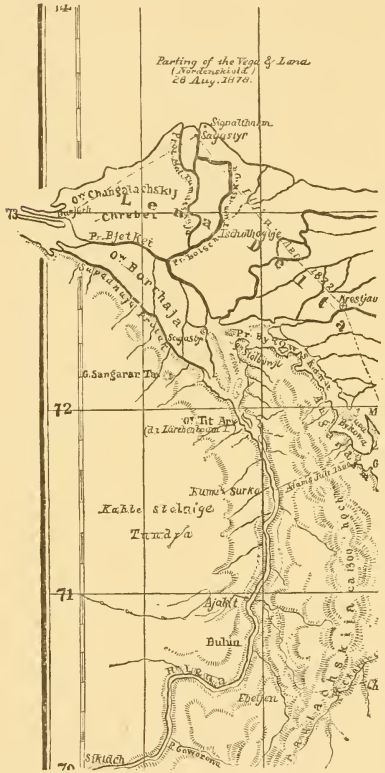
The two sailors were now in charge of a man with reindeer who was to take them to Bulun. They spent

one night in a hut on the road with natives, and after twice crossing the river, continued to the southward, and reached Bulun about six o'clock in the evening of October 29th. Here they were housed and given some tea, and then a native came and signed to them to follow him to the commandant. They expected to see the Russian with whom they had held their interview at Ku Mark Surka, but found another man in his place, who said that he was the commandant. Nindemann shook his head and otherwise expressed his doubt, whereupon the commandant, to convince him, showed him his uniform and sword. Nindemann now attacked this man also with signs and pantomimes to explain the state of affairs. He counted off on his fingers the number of people whom he had left to the northward, the captain and ten others. The commandant nodded assent, and seemed to understand, and Nindemann went on explaining. This man also spoke of telegraphing, and Nindemann, making signs for pen, ink, and paper, dictated to Noros a dispatch to the American minister at St. Petersburg.

The commandant said that he would take the paper on the morrow to the "captain," by which the men understood him to mean that he would take it to his superior officer at the telegraph station, but they did not know what telegraph station there might be in the neighborhood. They stayed that night with the commandant, and the next morning, and toward noon the commandant packed a box, and repeated that he was going off with the dispatch to the captain. The assistant-priest of the village had come in, and when the commandant left, invited Nindemann and Noros to his house. He kept them to dinner, but could not have them stay with him, as he was about to be married,

and sent them to the hut where they had been received when they came the night before.

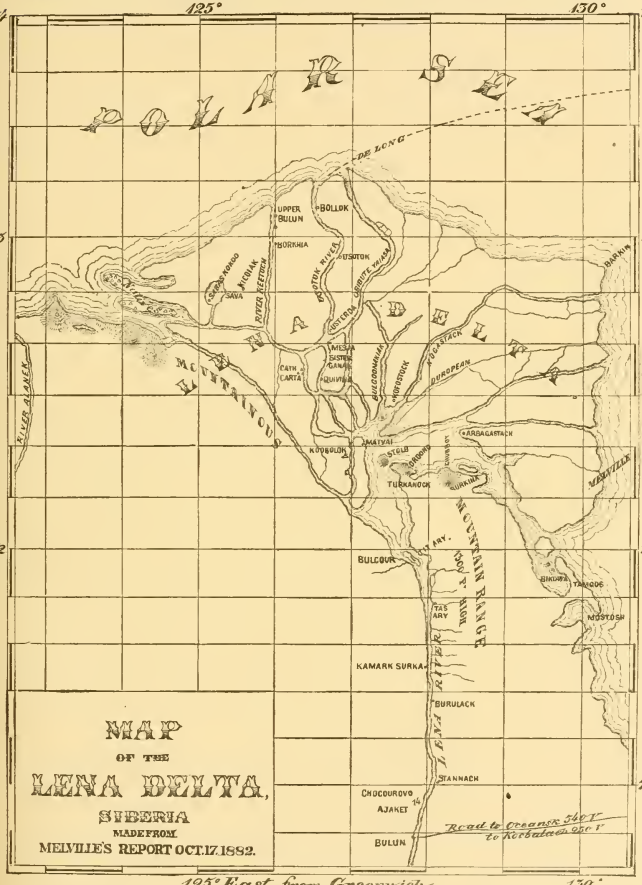
Both of the men were weak and sick with dysentery. They were in wretched plight, scantily clothed (for the natives had only lent them the deer-skin coverings), and insufficiently fed. They kept in the hut which had been assigned to them, too miserable to go away from it, when, in the evening of November 2d, three days after the commandant had gone off with their dispatch, as Nindemann lay on the rude bed, and Noros sat looking towards the open door, a man came in dressed in fur. Nindemann had turned to look at him, but turned back upon his bed, when the man came forward to Noros, who was sitting upon the table, and spoke to him.



Fac-Simile of Capt. De Long's Map.

"My God, Mr. Melville!" said Noros, "are you alive? We thought that the whaleboat's were all dead!"

Then it appeared that Kusmah had brought to Mr. Melville the note which the two seamen had written, —



for it was he of whom he had spoken by the name of captain, — and Mr. Melville had at once set out to

Bulun to find them. They told their story, and showed how they were now famishing upon the meagre fish diet, which was all they could get. Mr. Melville, who could make himself understood in Russian, sent for the priest, and demanded that the two sailors should have the best which the place afforded. To them, however, the best was that they were once more in the hands of their countrymen, and under the direction of their old officer.

Native huts and fish houses, Lena Delta.

CHAPTER XX.

THE FORTUNES OF THE WHALEBOAT PARTY.

12 *September* — 2 *November*, 1881.

The Separation in the Gale. — Heaving to. — The Storm. — Standing in toward the Coast. — The Mouth of a Broad River. — A Landing. — Up the River. — Discovery of Natives. — Cape Borkhia. — Piloted by the Starosti. — Arrhu. — Geeomovialocke. — Attempts to reach Bulun. — Condition of the Men. — Dispatches. — Kusmah. — Kusmah sets out for Bulun. — Lieutenant Danenhower attempts to reach Barkin. — Anxiety at Kusmah's Delay. — Return of Kusmah. — Intelligence of Nindemann and Noros. — Mr. Melville sets out for Bulun.

When the three boats separated in the gale of September 12th off the Siberian coast, Lieutenant Chipp was in command of the second cutter, and the three boats were under close-reefed sail, driving before a northeast gale. Chief-Engineer Melville was in command of the whaleboat, Lieutenant Danenhower, on the sick list, was with him, and R. L. Newcomb, the naturalist. The seamen Cole, Leach, Wilson, the firemen Bartlett and Lauterbach, the Chinese steward and the Indian Aneguin completed the number.

At seven in the evening the whaleboat was a little ahead of, and on the weather bow of the first cutter, about five hundred yards distant, when Captain De Long made a signal to Mr. Melville. In order to bring the whaleboat nearer Mr. Melville partially lowered his sail and gathered in the foot of it, hoping to drift toward the first cutter, but in slackening the speed the

seas began to come over the stern, and though the men pumped and bailed, there was great danger of being swamped.

Captain De Long perceived the situation and waved his arm to Mr. Melville with a motion which the latter interpreted as bidding him run before the wind and take care of himself, so he hoisted his sail, and in order to keep ahead of the sea, shook out one reef and hauled the boat about one or two points toward the southward. At the same time he saw Captain De Long make a signal to Lieutenant Chipp in the second cutter, which was about seven hundred yards distant from the first cutter and on her weather quarter. Shortly after, the whaleboat being a fast sailer, and darkness coming on, Mr. Melville lost all sight of the other two boats, and navigated the whaleboat without regard to them. He was uncertain how long he might be at the mercy of the elements, and accordingly reduced the allowance of pemmican from one and a half pounds to three quarters of a pound for each person, a day. The snow which they had brought from the island for quenching their thirst was rendered useless by the deluge of salt water which dissolved it.

The sea was running so high that it became necessary to heave the boat to, and a drag was made of three tent poles and a piece of canvas, giving about six square feet of surface. In this manner they rode out the gale from nine o'clock of the evening of September 12th to five o'clock the next afternoon. Before leaving Semenovski Island a weather-cloth had been contrived from the canvas boat-cover. It had been cut from the stern nearly as far as the mast, and tacked around the rail; the canvas had been peaked up by means of a mast coat, so as to shed the water off the

bows; a piece of canvas also had been sewed across to make a thwart-ship bulkhead; the canvas was tacked along the sides and raised on wooden stanchions; it was supported by the shoulders and backs of the men, thus making a cockpit and half-decked boat. The men crouched down to avoid the force of the gale and were constantly at work bailing the boat.

The storm was still raging when daylight broke on the morning of the 13th, and though the sun showed itself a little after noon, it was not until five in the afternoon that the storm had so far abated as to make it safe to get under way again. The wind and the sea had then subsided somewhat, and all night they ran to the west and southwest.

On the morning of the 14th the boat grounded in two feet of water, with no land in sight, and they stood to the eastward, hoping to get off the shoal and to feel their way southward; the point which they aimed to make, in accordance with the instruction of Captain De Long, was Barkin. There were light airs from the south southeast all day, but toward evening the weather looked more threatening, and, fearing to be caught in the shoals in bad weather, they stood to the eastward, and at midnight were in ten fathoms of water. Then the course was laid southeast, and at six o'clock on the morning of the 15th they stood to the southwest, hoping to strike the north and south coast of the Delta.

It was not until the morning of the 16th that they raised land, two low headlands forming the mouth of a large river. The water was muddy and brackish, but as the men had had no water to drink for four days they eagerly partook of this; as they slowly ascended the river the water became sweeter. The river mouth was a very wide one, the headlands being barely discern-

ible, and the water was discharged with considerable force. The wind, however, was from the eastward, and they worked on up the river, grounding occasionally on the shoals, for the channel was very tortuous. They tried to effect a landing but found it impossible, since the channel did not pass near the land, and the shoals constantly interrupted the boat's course. It was quite clear that they were to the south of Barkin, which point they had been ordered to make, but it seemed unwise to put out again to sea with all the chances of encountering another gale in their crippled condition, and they kept on up the river.

About seven o'clock in the evening they sighted a hut on a bank about ten feet above the water, and succeeded in making a landing near it. They hauled the boat up, got their gear out, and built a fire in the hut, which showed signs of having recently been occupied. When they got out of the boat, they were, for the most part, scarcely able to walk, so swollen and cramped were their legs and feet. They had been in the icy waters of the river, and the exposure had intensified the frostiness in their limbs, so that the fire at night caused terrible pain; nobody slept, and in the morning they were in a worse condition apparently than they were the previous night.

After shoving off in the morning and working up the river all day long they made an excellent day's work, finally coming to a branch of the river running nearly north and south. This they took to be the Lena proper, and after turning to the southward they camped on a low point of land in the mud. They called this the "Mud Camp." Three persons slept in a hut on the high ground.

On the 19th they took to the boat again, and, after

following the river, came into what appeared to be a large bay. The channel was very tortuous, sand spits were continually interrupting their course, but at length, shortly after noon, they effected a landing near a collection of huts. They had taken their dinner and were pulling off to get nearer the huts, when they espied three natives approaching them in their canoes. They beckoned to the natives to come close, and, after some hesitation, one of the canoes came alongside the whaleboat, when it was seized by one of the sailors. A little alarm followed, but by various signs Mr. Melville made the natives understand that they were friendly, and followed them to their landing-place. Here they feasted upon venison and goose and fish, and by an interchange of civilities soon became on excellent terms with the three natives. Mr. Melville tried by pantomime and drawing to persuade the natives to pilot them to Bulun, and the natives in turn, making out his wish, used very expressive pantomime to reply that it would be sure death to them to attempt it.

The place proved to be Cape Borkhia, and was a fishing camp of the natives. They stayed there all night and tried again, but in vain, to induce one of the natives to conduct them to Bulun. Then they pushed off again, but after a day and night of great discomfort on the river, a gale coming on, they were forced to return to the huts they had left, and reached Cape Borkhia in the evening. They found then that the Starosti, or head man of the village, had been sent for, and, on his arrival, Mr. Melville succeeded in persuading him to pilot the party to Bulun, which they made out from him to be six days distant.

They started on their journey the next day, September 22d, and on the 25th had reached a collection of

huts called Arrhu, where were about a dozen men, women, and children. Here the Starosti of Borkhia gave out, and secured the services of three young men of Arrhu to take them to the next point, the village of Geeomovialocke, where they arrived on the evening of the 26th. The condition of the men in the whale-boat at this time was very trying. They were badly frozen and otherwise incapacitated; but two or three, or at the most four, were able to do any work, but the men and women of the village helped discharge the boat, and the Starosti gave them the use of his house. The village was the first place which could be so called, which they had reached. It was upon an island in the river, and the natives assured Mr. Melville that it was a journey of sixteen days to Bulun. He insisted upon being taken there, and as his supply of provisions was now exhausted, he was compelled to depend upon the stores of the natives and upon such small game as they might fall in with.

They made an attempt to get away the next day, the purpose of the natives being to skirt Cape Borkhia and Cape Ordono, and to make their way into the Lena River proper upon which Bulun was situated; but after struggling with the ice and beating against a rising wind, they were compelled to return to the village and haul the boat up. The ice began to close in about the island, and the natives assured them that there was no way of escape until the wind should blow the ice out of the bay, or until the bay should be so completely frozen over as to permit them to cross it on the ice.

They were given a single hut, and furnished with provisions by the natives, but the addition of the party to the village at a time when it was very difficult to increase the stock of provisions made the situa-

tion a serious one, and the villagers put the strangers upon an allowance. Moreover, the diet to which they were forced, and the lack of any anti-scorbutic, might lead to an outbreak of scurvy, as the party was in a most crippled condition. "At this time," says Mr. Melville, "an exile had been put to live with us, making twelve men in our hut. We had had no bread for about forty days; we had no anti-scorbutics of any kind, no salt to use with our food, and the geese which we were supplied with were in a very bad state of decay, so much so that when we would hang them up their intestines would drop out. I told the men that they must be as cheerful as they could; make a point of burning plenty of wood; keep themselves as warm as they could; any way get plenty of wood so as to exercise all hands. I was very anxious at this time, owing to our short supply of provisions, and the kind we were living on, fearing that the decayed geese would cause typhoid fever, from the fact that we had no anti-scorbutics; in case we stayed there, I felt there was great probability of the whole party dying of scurvy."

They had amongst them prepared documents for transmission to the nearest authority. Mr. Melville prepared a telegram to the Secretary of the Navy and to the American Minister at St. Petersburg; letters were also written in English, French, German, and Swedish; pictures of the ship in the ice, and of the American flag, and some postage stamps were added, and all the papers sewed in an oilskin bag and committed to the Starosti of the village, who undertook to send them forward.

One by one the men began to improve in their condition, and Mr. Melville was exceedingly anxious to get the party moved to Bulun, and about the 10th of Oc-

tober there came to the village a Russian exile, who seemed more intelligent than the men about them, and was living across the bay on the mainland. This man was the Kusmah who later fell in with Nindemann and Noros. He represented that the ice in the bay was in such a condition that it would be impracticable for them to cross at this time, but promised on leaving to return in a few days and then go to Bulun for them and secure the assistance of the commandant of that post.

Kusmah was as good as his word, and on October 14th came again to Mr. Melville and expressed his readiness to go to Bulun, and to bring reindeer teams for the transportation of the party. as well as food and clothing, of all of which they stood very much in need. He told Mr. Melville that he would go and return in five days, and Mr. Melville promised to pay him, if he fulfilled his contract, the sum of five hundred roubles, and give him the whaleboat. He required also that he should start at once. He did not go. however, until the 16th, for it appeared afterward that as a criminal exile he could not go without the company of the Starosti of the village. However, he went at last, and they all impatiently awaited his return.

Meanwhile, in their intercourse with the Russians and the natives, they were slowly acquiring greater facilities of speech, and they learned that Barkin was only forty or fifty versts, or twenty-seven to thirty-four miles to the northeast of where they then were, and Lieutenant Danenhower made an attempt to reach the place in order to learn something, if possible, of the other boats. Owing, however, to the faithlessness or lack of intelligence of the natives, and to the difficulty of travel, whether by land or by water, he was

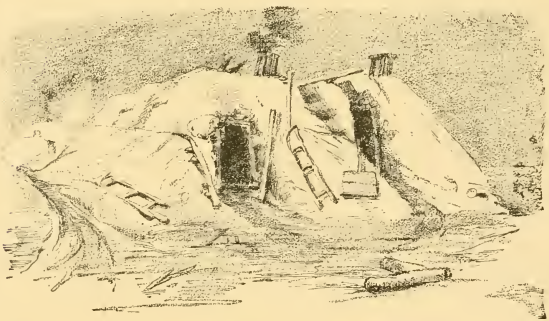
obliged to return to Geeomovialocke without accomplishing his errand.

As the five days of Kusmah's proposed absence were lengthened to as many more, Mr. Melville began to grow exceedingly anxious, and to cast about for means of getting away without waiting for Kusmah. He proposed to take sleds, load them with provisions, and while some of the party, who could, walked, to carry the remainder on the sleds. The great difficulty which presented itself was the necessity for a guide, and they were also insufficiently provided with clothing for a journey which promised great exposure. No guide could be had, for there appeared to be no one, save Kusmah and the Starosti, who were competent to pilot them.

At length on the evening of October 29th Kusmah returned, bringing with him some supplies, letters from the commandant and priest at Bulun, and the short note from Nindemann and Noros, which Kusmah had pocketed when he met these men at Ku Mark Surka. It may here be remarked that the sailors when talking by signs with Kusmah had been perplexed by the alternate intelligence and ignorance of the Russian. They did not know that Kusmah had come from Mr. Melville, and Kusmah in talking with them, if talking it could be called, had the whaleboat party in his mind, when Nindemann and Noros had Captain De Long and his party in their minds.

Kusmah explained to Mr. Melville that his prolonged absence had been caused by unexpected difficulties in the journey, and that the commandant was to leave Bulun at once with the necessary teams and supplies. But Mr. Melville, as soon as he had received this intelligence of the whereabouts of Nindemann and Noros,

and that the captain and his party were in need of assistance, lost no time in starting for Bulun. He left his party in charge of Lieutenant Danenhower with instructions to proceed to Bulun as soon as transportation could be had, and started by dog-team, in company with a native, to go on in advance, hoping to meet the commandant on the road. They passed each other without knowing it, and Mr. Melville reached Bulun the evening of November 2d, where he found Nindemann and Noros as already related.



Siberian Exile Huts.

CHAPTER XXI.

THE FIRST SEARCH.

3 — 27 *November*, 1881.

Bartlett arrives at Bulun with Dispatches from Geeomovialocke. — Mr. Melville goes North to Buralak. — Meets the Whaleboat Party. — Sends them South to Bulun and Yakutsk. — Proceeds in the Track of Nindemann and Noros. — At Bulcour. — The Two Crosses. — Mat Vai. — Kas Karta. — North Bulun. — Is shown Records left by Captain De Long. — To Balloch. — Finds the Cache made when the First Cutter Landed. — Secures the Deposit. — Returns to North Bulun. — To Osoktok. — To Sister Ganach. — Loses the Trail. — His Perilous Condition. — Sets out to return to Bulun. — A Severe Journey. — Rejoins the Party at Bulun. — Proceeds with them to Yakutsk. — Remains at Yakutsk with Nindemann and Bartlett. — Lieutenant Danenhower proceeds to Irkutsk. — Details of Men to assist in Spring Search. — Lieutenant Danenhower returns to America.

THE commandant of Bulun, when he went to Geeomovialocke, carried with him the long dispatch which Nindemann and Noros had prepared for the American Minister at St. Petersburg, and delivered it into the hands of Lieutenant Danenhower, who at once determined to send it by J. H. Bartlett, fireman, to Mr. Melville, and to follow with the rest of the party as soon as he could persuade or drive the commandant into starting. The next evening, therefore, after Mr. Melville had arrived at Bulun, he was met by Bartlett, bringing the dispatch, and also a letter from the commandant to the Starosti of Bulun, instructing him to

furnish Mr. Melville with a deer-team down the river to Burulak, which lay on the road between Bulun and Geeomovialocke, and advising that he was on the way with the whaleboat party.

Accordingly, when Mr. Melville reached Burulak on the evening of November 4th, he waited until the next day, when the whole party appeared under charge of the commandant. Mr. Melville now held a consultation with Lieutenant Danenhower, and announced his intention of proceeding at once to the north with natives in search of Captain De Long. He gave Lieutenant Danenhower instructions to proceed with his party to Bulun, there to add Nindemann and Noros, who were in no condition at the time to join in any search, but to leave Bartlett at Bulun for further service. He was then to conduct the whole party under his charge to Yakutsk, where he would be in communication with the Russian government and with the United States Minister. There he was also to await the arrival of Mr. Melville, who expected to be absent a month possibly in his search.

Lieutenant Danenhower parted with Mr. Melville, and at Bulun, finding there was not sufficient transportation for the whole party, decided to leave the most able-bodied under charge of Bartlett, and to proceed south with the weakest and most disabled, leaving the others to act as support to Mr. Melville, and to return finally with him. He started from Bulun November 12th with Mr. Newcomb, Cole, Leach, Wilson, and the Chinese steward; leaving behind him Bartlett, Nindemann, Noros, Lauterbach, Manson, and Aneguin. Nindemann was by no means able-bodied at the time, but he preferred to remain in order to regain his strength, and it was possible that with the knowledge of the country and people which he had acquired, he might be of

further use to Mr. Melville in his search. The party with Mr. Danenhower reached Yakutsk, a distance of about twelve hundred and fifty miles, December 17th.

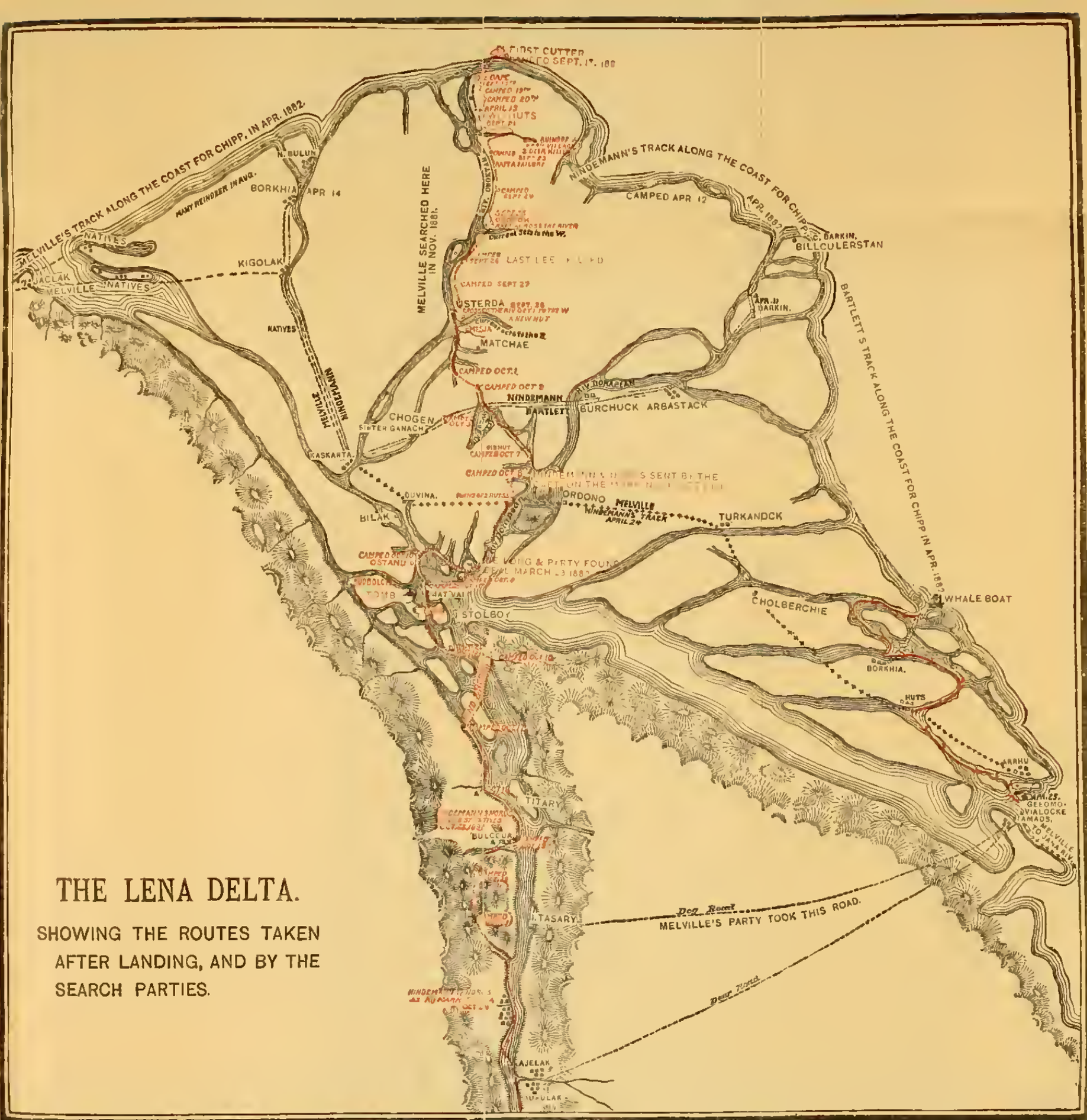
When Mr. Melville started north from Bulun in search of Captain De Long, he had made careful notes of all the information which Nindemann and Noros could give him. His intention was to return upon their course as closely as the somewhat indefinite chart would allow, and to continue as far as the point where Captain De Long had landed. He was furnished with two dog teams, two native drivers, and ten days' supplies of fish for the men and dogs; and immediately after conference with Lieutenant Danenhower at Burulak, he set forth, and before night reached Ku Mark Surka. The next day he came to Bulcour, the huts where Nindemann and Noros had been found by the natives, but was obliged to lie by there a day on account of a severe storm which made further progress perilous. Mr. Melville had not yet recovered from the effect of the exposure at landing when his feet were frozen, and had again frozen his feet on the journey from Bulun to Burulak. He remained, therefore, with his native party at Bulcour until the morning of November 8th, when the storm had cleared, and then proceeded on his way.

His course took him, point by point, over the track of the two sailors. On the 8th he found the place where they had burned the sleds for fuel, and pushed on thence, making about forty miles that day, and camping at night in the snow. On the 9th he found the place known as the Two Crosses, where Nindemann and Noros had slept after their long wandering upon the river, and that night he camped at Mat Vai, the name given by the natives to the hut where the sailors

had spent the night of October 11th, and the whole of October 12th. Nindemann, in reporting his journey to Mr. Melville, had forgotten to name this place, and accordingly Mr. Melville thought for a time that he had come upon evidences of occupation by some of Captain De Long's party; for the sticks used to protect sleepers from the ground had been rearranged so as to make a bed with the feet toward the fire, a custom different from what prevailed among the natives of this region. One of the party also picked up a waist-belt, and Mr. Melville, on examining the buckle, knew that it had been made in the fire-room of the Jeannette.

With this perplexing evidence of occupation, he made up his mind to keep on, following the west bank; but upon ordering the natives to make ready to move the next morning, November 10th, they met him with the statement that provisions were exhausted, and they must return, for there was nothing either for them or their dogs. As the commandant had agreed to load the sleds with ten days' provisions for men and dogs, and they had only been out five days, Mr. Melville insisted upon going on. He asked how far it was to the nearest village, and they replied that it was more than a hundred miles, but they did not want to go on; they wanted to go back. There were twenty-two dogs with them, and Mr. Melville very emphatically told them that he should go on; that they would eat the dogs as long as they lasted, and when the dogs gave out he should eat them.

His resolution had its effect, and they set out for the village, which was called North Bulun and close to the shores of the Arctic Ocean. They passed a number of huts upon the way and spent one night at a place called Kas Karta, where the abundance of scraps of



THE LENA DELTA.

SHOWING THE ROUTES TAKEN AFTER LANDING, AND BY THE SEARCH PARTIES.

reindeer meat showed very clearly that none of Captain De Long's party had come this way. The journey was one of extreme severity, and when they reached North Bulun, at midnight of the 11th, Mr. Melville was so badly frozen that he had to be carried from the sled to a hut. Here the natives began to swarm about him, and now for the first time he began to collect evidence of the party. One man brought him a paper, which proved to be one of the records left by Captain De Long on his march, and told him there were other papers and a gun to be had. These were produced the next day, which was a very stormy one.

Upon examining the natives Mr. Melville was able to locate the direction and distance of the huts where the records had been found, and he at once made preparations to push his search. His team of dogs was worn out, and he secured a fresh team, and directed ten days' provisions to be packed on the sleds. The natives were reluctant to obey his instructions, and when he had entered the hut again to make ready for his journey, they managed to unload a portion and return it to their storehouse. Mr. Melville's feet were in such a condition that he could not wear moccasins, and the women in the hut provided him with deerskin mufflers for his feet. He set off, however, on the 13th, to make Balloch, the hut where the first record had been found, and distant from North Bulun about thirty-three miles.

He reached the place in the evening and slept there that night, but found no further record or evidence of occupation. This was the place where Captain De Long and his party had slept the night of September 21st. By reference to the chart which he had, it will be seen that no such place as North Bulun was marked

upon it, and he could have no knowledge that there were natives thirty miles or so to the westward. Mr. Melville, on the morning of the 14th, turned his dogs to the north and followed the east bank of the river until he came to the Arctic Ocean. Then he kept along the shore to the eastward until he came up with the flagstaff which marked the place where the articles of the boat had been cached. Upon digging he found the log books, the chronometer, the navigation box, a lot of pots and pans and kettles, two fire pots, a number of old sleeping-bags and old clothing which had been used to cover the instruments. He loaded his sled with everything, carrying away much that was worthless, in order to avoid misleading any one who might go there afterward on a similar search.

He returned that night to Balloch, and the next day he proposed going to Osoktok, the second hut at which records had been found. It lay twenty-five miles or so to the southward, but there were no provisions either at Balloch or Osoktok, and he was compelled to return to North Bulun to make a fresh start. There he selected from the material which he had brought away from the cache whatever was of value, and gave the rest to the natives. He procured two good teams of dogs and a short team of seven dogs, and set out again on the 17th, as soon as a raging storm would permit him, for Osoktok. He found nothing there, and pushed on to the next hut where Captain De Long and his party had stopped and left a record. In this record Captain De Long had expressed his intention of crossing the river to the westward, and following down the west bank to a settlement. Mr. Melville, therefore, after spending the night at a more habitable hut not far away, took the same course the next day. He

could distinguish the groove which the sled had cut in the soft slush a month before. In that wilderness nothing had passed since to cover the track.

Mr. Melville was in search now of the hut where Ericksen had died. He was guided only by Nindemann's account, and it was of course a matter of extreme difficulty to determine a locality which was marked clearly enough in the sailor's mind by the death of his comrade, but had been only one of the various stopping places in a fearful march through snow and over ice. As nearly as Mr. Melville could conjecture, this hut was anywhere from fifteen to twenty-five miles to the south of where the party had rested after crossing the river, and the natives who were with him guided him to a hut answering to that distance on the west bank. It was not the place, however, for which he was looking. They said there was another on the east bank, a few miles farther south. He went there also, but it was not the place, for Nindemann had told him of the epitaph board which they had placed over the door of the hut.

He kept on to a hut called Sister Ganach, and there spent the night. It was storming furiously. The snow was very deep, and it was with difficulty that he could persuade the natives to go on, but at length they succeeded in moving forward to a hut known as Qu Vina. In both of these huts there was so much in the way of remnants of reindeer meat that it seemed very clear that Captain De Long and his party could not have passed this way. It was Saturday evening, the 19th of November, that Mr. Melville reached this point, and here he was forced to stay through the storm until Monday, the 21st, when the weather was comparatively fine. From this time until he rejoined his people at Bulun we will give the narrative in his own words: —

"I started at three or four o'clock in the morning to follow the river bank down as far as the hut Mat Vai. This is where I was doubling on my own track. It was now thirty or thirty-two days after the time that Nindemann and Noros had left them there poorly clad, and I had made up my mind by this time that after thirty days' starvation they were all probably starved or frozen to death; that in the mean time if they had found the natives, or if the natives had found them, they were as safe as our party were; but if they had not found the natives they would surely be dead. I then made up my mind to make as quick time as I could by way of the hut Mat Vai back to Bulun. Now that the weather was fine, I intended to run by the hut, as it was but forty versts (twenty-six miles) even if it stormed. I concluded to stop at Mat Vai as short a time as possible, as we were out of provisions except the offal that I had picked up in the huts. After leaving Qu Vina about two hours the natives stopped their teams and dug up a cache of venison bones that they had buried the summer before. They added this to our load, and we sledded along, passing Mat Vai in the afternoon.

"About seven o'clock in the evening, in entering a mountain gorge where the river debouched into the bay, the storm blew from the southward, so that we were compelled to camp down. It is impossible to move when it storms and blows, because the dogs cannot be made to face the wind. They simply lie down and howl; and beat them as you may you cannot make them move. The natives dug a hole in the snow about six feet square, three or four feet deep, turned the sleds up to the windward of the hole, and got into their sleeping bags in the snow bank. The storm continued

to blow during the whole of that night, the next day, and the next night. It was impossible to move until the next day morning, when it cleared up a little, but, in the mean time, we had nothing to eat. It was too stormy to make a fire to make tea, and the venison bones which the natives had dug out were full of maggots. We chopped this up in little cubes and swallowed it whole, which made me so sick after it warmed up in my stomach that I vomited it all out again.

"About seven o'clock in the morning I got ready to start the teams to the southward, turning the short team back again to go home. The short team of dogs had something like two hundred and fifty versts (about a hundred and seventy miles) to go northwest, and no supplies but two dried fish and a quarter of a pound of tea. I put all the loads from the three sleds on to two sleds, and started for Bulcour, the nearest place where I could make a fire. I arrived at Bulcour about eleven or twelve o'clock at night. It stormed so during this day, the wind had carried dogs and sleds whither it would. Owing to the manner in which the sleds were made, in traveling over the sand banks the runners were worn away, so that the lashings were constantly cut and the sleds were continually breaking down. I set to work repairing the sleds, and the next day started for the native village known as Ku Mark Surka, about fifty or fifty-five versts (thirty-three to thirty-six miles) from Bulcour. On my journey to the northward, I had traversed this fifty versts in about seven hours, but on my return it was so stormy and the snow so deep that it took about fourteen hours. The dogs were so exhausted from starvation that they could only drag the sleds along. I was frozen so badly that I could not walk. The natives were not frozen, but were so tired

from hauling the sleds, that when they got within eight versts (five and a half miles) of the village, they proposed not to go any farther, but wait until the next day and camp in the snow. When the natives stopped, the dogs howled like wolves, the dogs in the village hearing the dogs attached to the sleds howling, answered the call, and the dogs made a fresh start and got in all right that night out of the storm.

"I arrived at Ku Mark Surka on the 24th of November, remained there all night, and the next morning started the dog teams and arrived at Burulak, where I remained over night, and the next morning started for Bulun, a distance of eighty versts (fifty-three miles). The snow at this time was so deep and the weather so bad that it required a train of sixteen reindeer to carry myself and one dog driver and the articles recovered at the cache; for these eighty versts the ordinary time is eight hours, and I had made it before in seven hours. On this occasion it required fourteen hours to make it, for I was obliged to stop at a native village called Ajaket, the natives having lost their way on the river, and bringing up at this place to warm up. I arrived at Bulun on the morning of the 27th of November, having been absent twenty-three days."

Mr. Melville estimated that on this first search he had traveled about six hundred and sixty-three miles. He had, without knowing it, passed near to the spot where the party for whom he was looking lay dead; but it was plain that now in the depth of winter, and at a distance from necessary supplies, it was impossible to make further search, either for the people of the first cutter, or for those of the second cutter, about whom no syllable had yet reached him. He determined therefore to remove the men who had remained behind when

Lieutenant Danenhower went southward, and return in the spring for a further search. Accordingly he went forward himself to prepare the way, and was followed by Bartlett in charge of the whaleboat party, who came up with him at Verkeransk, the first place of any importance. Here he made provision for the further transportation of the party to Yakutsk, and also took advantage of the presence of an English-speaking Russian to write a full letter to the Espravnik, or head man of the district, giving explicit instructions with regard to the recovery of any of the people, or their remains, and such effects as might be found.

Mr. Melville finally reached Yakutsk December 30, 1881, and there found himself in communication with his government, and with the authorities at St. Petersburg. Mr. Danenhower with his party had preceded him about a fortnight, and Bartlett and the rest of the whaleboat party arrived on the 3d of January, 1882. It was clear that nothing would be gained by maintaining a large party for the spring search, as the necessary supplies for the long journeys were difficult to procure, and Mr. Melville therefore retained only Nindemann and Bartlett to assist him in the further search, and gave the other nine men in charge of Lieutenant Danenhower, with instructions to proceed to Irkutsk, and thence to the Atlantic seaboard on their way to America. He gave him also the articles, including log-books and records left in the huts, which he had recovered from Captain De Long's party.

Lieutenant Danenhower started from Yakutsk January 9, 1882, and reached Irkutsk, a distance of over nineteen hundred miles, on the 20th of the same month. One of the men, John Cole, was suffering from mental aberration, and required a special attendant. Lieuten-

ant Danenhower himself had not fully recovered the use of his right eye, but the oculist at Irkutsk advised him that it would soon be well, and he telegraphed for permission to remain and hire a steamer with which to make search for Lieutenant Chipp's party in the spring and summer; and that two line officers should be sent to assist. The entire party with him also volunteered to remain and assist in the search. The permission to remain was at first given, but Mr. Danenhower cabled that his eyes were in very bad condition, the right eye completely disabled, and the left one affected through sympathy; whereupon the order was revoked. He was detained by the oculist, and while waiting, Mr. J. P. Jackson, special correspondent of the "New York Herald," arrived at Irkutsk, on his way to the Lena Delta. By order of the Department, the seaman L. P. Noros, was detailed to accompany him, and when Mr. Jackson and Noros left for Yakutsk, March 12th, Lieutenant Danenhower and the remainder of his charge set out for St. Petersburg. At Nischnendinsk, which they reached on the 17th, a telegram came stating that Lieutenant Giles B. Harber, U. S. N., who had been sent with Master W. H. Schuetze to search for Lieutenant Chipp and his party, was on his way, and they waited here for him. Lieutenant Harber, after a conference with Lieutenant Danenhower, when the entire company volunteered to join him in the search, telegraphed for permission to take with him the five seamen who were in the best condition, and upon receiving the assent of the Department, followed in the course of Mr. Jackson and Noros, with Leach, Manson, Wilson, Lauterbach, and the Indian Aneguin, while Lieutenant Danenhower set out for home with Mr. Newcomb, the seaman John Cole, who required a special attendant,

and the Chinese steward. They reached New York May 28, 1882.

There were now therefore three parties remaining in Siberia to conduct the search as soon as the season would permit: Mr. Melville, with Nindemann and Bartlett, whom we left at Yakutsk; Mr. Jackson with Noros; and Lieutenant Harber with his force of five men.

Stolbovoi. Monument Hill.

Melville's Depot of Supplies and Station at Mat Vai, during Spring Search.

CHAPTER XXII.

THE FINAL SEARCH.

Mr. Melville makes Preparations at Yakutsk. — Russian Assistance. — Rendezvous at Bulun. — Mr. Melville at Geeomovialocke. — Depots Established at Kas Karta and Mat Vai. — The Explorations from these Points. — The Discovery of the Bodies. — The Removal to Mat Vai. — The Entombment. — The Search for Lieutenant Chipp's Party. — The Three Search Parties. — Nindemann's Journey. — Bartlett's Journey. — Mr. Melville's Journey. — Meeting at Geeomovialocke. — Mr. Jackson and Noros. — The Journey to Yakutsk. — Lieutenant Berry and Ensign Hunt. — The Return Home. — Lieutenant Harber's Search. — The Alliance.

As soon as Lieutenant Danenhower had left Yakutsk for Irkutsk, January 9, 1882, Mr. Melville began his preparations. He was fortified with a dispatch which he had received from the Secretary of the Navy, which read : —

" Omit no effort, spare no expense in securing safety of men in second cutter. Let the sick and the frozen of those already rescued have every attention, and as soon as practicable have them transferred to milder climate. Department will supply necessary funds."

When Tchernieff, the Governor of Yakutsk, saw this dispatch, he recognized that it was an official telegram from the United States government, and informed Mr. Melville that the whole force of Russia at the command of the Governor was at his service, and that there was no limit to the demand which he might make for money, provisions, or people. It was necessary to have tobacco,

food, and clothing supplied from Yakutsk, and transported over the mountains in midwinter on pack-horses, reindeer sleds, and dog sleds to the Lena Delta, the distance to the Arctic Ocean, by post road, being over fifteen hundred miles. Mr. Melville engaged three interpreters to accompany him and his assistants, for, owing to the scarcity of teams on the road, it was necessary to move in three separate parties.

Nindemann and his interpreter started for Bulun January 19th; Bartlett and his interpreter, with the provision train, followed on the 23d, and Mr. Melville remained until the 27th, when he proceeded, accompanied by Captain Grönbeck, the captain of the steamboat Lena, which plied on the Lena River. With them also went the Espravnik of the district, who was to lend the authority of the government in all their dealings with the natives. Mr. Melville had provided himself with the most recent chart of the Lena Delta which he could obtain, and this bore Nordenskjöld's corrections, which were of course not available when the Jeannette had set out on her voyage. This chart itself was still very imperfect and was rendered much more complete after Mr. Melville and his companions had traversed the Delta.

Nindemann reached Bulun February 12th, and Mr. Melville and Bartlett on the 17th and 18th. A month was required to collect dog teams and provisions, and to establish depots of supplies at Mat Vai and Kas Karta, which Mr. Melville had selected as the most convenient rendezvous. In making the necessary arrangements Mr. Melville was obliged to revisit Geeomovialocke, and to repeat much of the severe experience in travel of the November before. He was, however, in far better condition for his work than then; for not

only had he himself recovered from the effects of his exposure, but he was relieved of the care of a partially disabled party, and he was armed with all necessary authority and means. Accordingly he settled all the claims which the people in the district had against the whaleboat party, inquired into the conduct of Kusmah, whom he suspected to have played them false when he had sent him from Geeomovialocke to Bulun, brought to some sort of justice the petty authorities who had refused proper care of his people when they were in their wretched condition, and summarily broke up, with the Espravnik's aid, a ring which had been formed to get control of all the provisions of the country and advance the price to the Americans.

In the course of this month he learned much of the poverty of the natives, and of the risks of starvation and freezing which were run in this bleak and destitute land. Once at least he was able to rescue one party from starvation, and by energy and resolution he carried through his plans until, on the 16th of March, he was able to set out in company with Nindemann upon his first search.

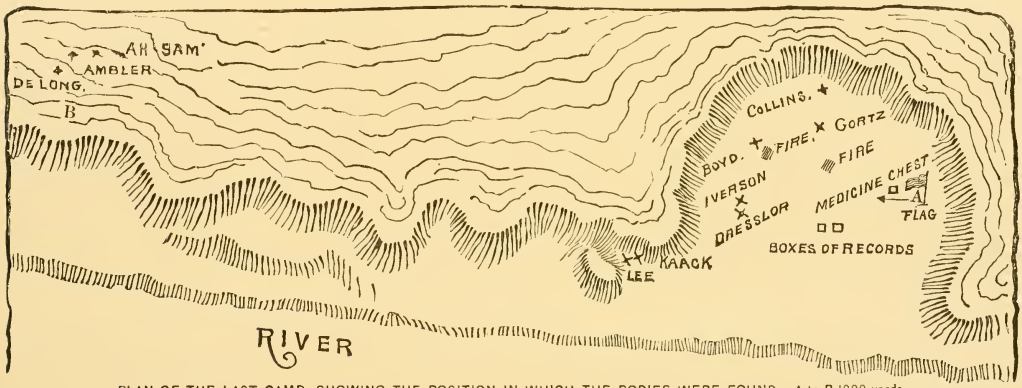
They left Kas Karta and found the place, Usterda, where Captain De Long had crossed the river to the westward. Nindemann at once recognized the spot, and they now made search for the hut where Ericksen had died; for if they could once find that, their track afterward would be greatly simplified. They inquired of their native attendants for all the huts in the neighborhood, describing particularly the one for which they were in search, and following the clues given them went in every direction, but without success. The snow lay deep on the ground, effectually covering any traces of previous travelers, and they were themselves

sometimes fighting the storm, sometimes running before it.

They were compelled to return to Kas Karta, and now having made up another team for Bartlett, Mr. Melville sent him to Mat Vai with instructions to work his way northward on the largest branch of the river he might find, while he and Nindemann would work from the northward to the southward. Both parties left at the same time. Bartlett ran for Mat Vai, which he reached, but Mr. Melville and Nindemann were obliged to camp out all night in the snow, only reaching Qu Vina the next day, where Bartlett afterward joined them. They were all working at terrible disadvantage, owing to the storm which raged almost incessantly, but at length, leaving Bartlett at Qu Vina, Mr. Melville and Nindemann set out from Mat Vai when the weather had cleared, with the purpose of going to the westward along this bay from headland to headland as far as the mouth of each river.

"We followed the bay," says Mr. Melville in his narrative, "until late in the evening, having visited all the headlands; finally we came up to the large river with the broken ice. I jumped up on the headland or point of land making down in the bay and found where an immense fire had been made. The fire bed was probably six feet in diameter, large drift-logs hove into it, and a large fire made, such as a signal fire. I then hailed Nindemann and the natives, saying, 'Here they are!' They thought that I had found the place where the De Long party had been. Nindemann came up on the point of land, and said that neither he nor Noros had made a fire of that kind, only a small fire in the cleft of a bank; but he was sure that this was the point of land they had turned going to the westward,

and that this was the river along which he and Noros had come. I asked them if the Yakutsks made a fire like that, and they said no; that they only made small fires. I then concluded that De Long and his party had been here, but supposed they had turned, as Nindemann and Noros had, down to the westward, and expected to find them somewhere to the westward. Nindemann had described an old flat-boat that lay on the bank of the river a short distance up this same river. If we found the flat-boat that would show this to be the river on which Ericksen's hut was located. I then started up the river with the intention of going as far as Ericksen's hut, getting the relics there known to be in the hut, and to return to the point of land and continue the search between the point where the fire had been and Mat Vai. Nindemann started with his dog team in advance, some four or five hundred yards, and while running along sighted the flat-boat. I followed after him, sitting on the sled, facing the bank. The bank here was twenty-five or thirty feet high above the bed of the river, and the snow filled in with a natural slope to the height of the bank, and passing probably forty or fifty feet out to the river; but the wind blew so fiercely in this section that very little snow lies on the high lands or Tundras. The snow was blown into the valleys, forming banks equal in depth to the depth of the natural bank of the river. It is the custom of the people here in making a search to go facing the bank of the river, and when they see anything to attract them, drop off the sled and examine it, or pick it up and go on. In this manner about five hundred yards from the point where the fire had been, I saw the points of four sticks standing up out of the snow about eighteen inches, and lashed to-



PLAN OF THE LAST CAMP, SHOWING THE POSITION IN WHICH THE BODIES WERE FOUND. A to B 1000 yards.

gether with a piece of rope. Seeing this I dropped off the sled, and going up to the place on the snow bank, I found a Remington rifle slung across the points of the sticks, and the muzzle about eight inches out of the snow. The dog-driver seeing I had found something came back with the sled, and I sent him to Nindemann to tell him to come back, he having gone as far up the river as the flat-boat. When they returned I started the natives to digging out the snow-bank underneath the tent poles. I supposed that the party had got tired of carrying their books and papers, and had made a deposit of them at this place, and erected these poles over the papers and books as a landmark, that they might return and secure them in case they arrived at a place of safety. Nindemann and I stood around a little while, got upon the bank, and took a look at the river. Nindemann said he would go to the northward, and see if he could discover anything of the track and find the way to Ericksen's hut. I took the compass and proceeded to the southward to get the bearings of Stolbovoi and Mat Vai, so that I might return there that night in case it came on to blow.

"In proceeding to a point to set up the compass I saw a tea-kettle partially buried in the snow. One of the natives had followed me, and I pointed out to him the kettle, and advancing to pick it up I came upon the bodies of three men, partially buried in the snow, one hand reaching out with the left arm of the man raised way above the surface of the snow — his whole left arm. I immediately recognized them as Captain De Long, Dr. Ambler, and Ah Sam, the cook. The Captain and the Doctor were lying with their heads to the northward, face to the west, and Ah Sam was lying at right angles to the other two, with his head about the

doctor's middle, and feet in the fire, or where the fire had been. This fireplace was surrounded by drift-wood, immense trunks of trees, and they had their fire in the crotch of a large tree. They had carried the tea-kettle up there, and got a lot of Arctic willow which they used for tea, and some ice to make water for their tea, and had a fire. They apparently had attempted to carry their books and papers up on this high point, because they carried the chart case up there, and I suppose the fatigue of going up on the high land prevented their returning to get the rest of their books and papers. No doubt they saw that if they died on the river bed, where the water runs, the spring freshets would carry them off to sea.

"I gathered up all the small articles lying around in the vicinity of the dead. I found the ice journal about three or four feet in the rear of De Long; that is, it looked as though he had been lying down, and with his left hand tossed the book over his shoulder to the rear, or to the eastward of him. I referred to the last pages of the journal, and saw where the next man had died after Ericksen. The first man that died after Ericksen was Alexey, the Indian hunter. The journal stated that he had died in the flat-boat; that was about five hundred yards from where we then were. Referring to the journal, I found that the whole of the people were now in the lee of the bank, in a distance of about five hundred yards. In the mean time, the native that had gone for Nindemann had brought him back. We covered the bodies with a piece of old tent cloth. . . . The natives continued to dig underneath the tent-poles, at the edge of the bank, and after a while struck the earth and found nothing. In the mean time it came on to snow and blow. I told the natives to dig away

FINDING THE BODIES OF CAPTAIN De LONG AND HIS COMPANIONS.

for a spell, and just before night set in we found the head of one man and the feet of another underneath the snow-bank. The natives being frightened jumped out of the hole quickly. I told them to dig a little longer, that the books might be there; and after digging for a spell they threw out a box of books, and exposed the shoulders of a third person. It was about twenty versts (about thirteen miles) across the bay to Mat Vai, where our camp was. We stuck a stick of timber in the hole where we were digging, gathered up some traps we found, and returned to Mat Vai."

The next day, having sent for Bartlett, Mr. Melville ordered the two men, with the entire force of natives, back to the spot where they had discovered the bodies, with instructions to bring to Mat Vai at night all that they should uncover. He himself remained in the hut with the interpreter, to prepare at once dispatches and letters for his own government and the Russian. Two days were thus occupied, and at the close of that time there seemed to be nothing further to be recovered save the body of Alexey; and Captain De Long's record that they had buried him in the river explained the failure to find him. Mr. Melville offered a reward to the natives if they should discover Alexey's body, but desisted from further search.

It then became necessary to find a place for burial. "The whole of the territory," says Mr. Melville, "to the northward of where I was, and the headland where De Long and Ambler had died, was sometimes covered with ten or fifteen feet of water. The whole of that portion of the Delta is covered at some seasons of the year with ice and snow, and is carried away by the floods that come down the river. When the snows melt up the river the floods come down the river, rush over

and on the ice like an ocean bore, and carry away everything. The nearest place of safety was the foot-hills to northward of the mountains that form the banks of the Lena River proper. About ten versts (about seven miles) to the southward of Mat Vai there was a little whale-back rock between three and four hundred feet high. I selected a flat spot on the top of that mountain, and started the hands at work to dig a hole in the rock in which to set up a cross."

Nindemann and Bartlett were set at work with a number of the natives to break up the old flat-boat to get timber to make a box; and a spruce spar was found which was hauled to Mat Vai, and used in the construction of a cross.

It was on the 23d of March that Mr. Melville had found the first bodies, and on the 7th of April he had completed his last offices. Every article carried about the persons of the dead was carefully removed, to be brought home, excepting a small bronze crucifix found upon Mr. Collins, and left upon his breast. The bodies were placed in the box, and the box securely covered Then a pyramidal structure of timber and stone was raised over the box, and the cross, with its inscription cut deep into the wood, firmly fixed above the tomb. Nindemann, meanwhile, had succeeded in finding the hut where Ericksen had died, and brought away the gun, record, and epitaph board which had been left there. Nothing more could now be done for those who had perished in this lonely spot, and it remained to make search for the fate of the second cutter, under command of Lieutenant Chipp.

It will be remembered that the three boats had parted in the gale of September 12th off the Siberian coast. We have followed the fortunes of the first cut-

ter and of the whaleboat. No sign had ever been given of the second cutter after she was lost to sight, and there could scarcely be a doubt that she went down in the gale, an end barely avoided by the other boats. But Mr. Melville and his companions could not leave the Delta until every possible search had been made.

Mr. Melville now withdrew the whole of his force to Kas Karta, to make that the starting point of his search. He provided himself with dog-drivers and guides who were well acquainted with the east and north coasts of the Delta, established depots of supplies at convenient points, and then divided his force into three search parties. He sent Nindemann and Bartlett with four dog sleds and drivers up the main river to Barkin, where they were to separate, Bartlett to take the southern track, the east coast of the Delta, and visit all the headlands, running up rivers as far as provisions would allow, and continuing until he came to Geeomovialocke. Nindemann, after he parted company with Bartlett at Barkin, was to follow along the north coast of the Delta in the same manner as far as the river Osoktok, and finally to return to Kas Karta, there to wait Mr. Melville's arrival.

Mr. Melville himself started to the northward and westward, followed the coast in the same manner, and returned finally to Kas Karta about the 21st of April. As an illustration of the imperfect communication between parts of the Delta, it may be noticed that Mr. Melville found natives who were entirely ignorant of the landing of any Americans on the coast, or of the various searches which had been made back and forth across the country.

He found Nindemann at Kas Karta, and both pro-

ceeded to Geeomovialocke, where they found Bartlett. They had, in their separate searches, outlined the entire coast of the Delta, run up the mouths of all the streams, held intercourse with natives in every direction, and the total absence of any evidence respecting Lieutenant Chipp and his party left no room for doubt in their minds as to the fate of the second cutter.

They had been at Geeomovialocke one night only, when word was brought them that there were Americans at a village near by. Mr. Melville at once drove over and found Mr. Jackson and Noros. Mr. Jackson was desirous of visiting the tomb of Captain De Long and his party, and left them to go thither; while Mr. Melville, Nindemann, and Bartlett set out for Yakutsk, taking, however, the route by the river Jana, not before traversed, that no possible stone should be left unturned in searching for Lieutenant Chipp.

While at the mountain divide between Verkeransk and Yakutsk, they were met by Lieutenant Berry and Ensign Hunt, members of the relief expedition sent out by the United States Government. This party had left San Francisco in the U. S. S. Rodgers in June, 1881, and after cruising about Wrangel Island had gone into winter quarters in St. Lawrence Bay, on the northeast coast of Siberia. Here the steamer had caught fire and burned at the end of December, and while most of the party made their way to St. Michael's and thence back to San Francisco in the following spring, Colonel Gilder, Lieutenant Berry, and Ensign Hunt, in pursuit of the main object of the Rodgers expedition, travelled west, traversed Siberia and were now in the Yakutsk district. They joined Mr. Melville, who gave them the information which he had, and kept on his way with them, arriving at Yakutsk about the 8th of June.

Here he expected to find Lieutenant Harber, of whose movements he had heard, but learned that he was then at Vittim, nearly seven hundred miles up the Lena River, getting vessels ready for an exploration of the Delta by water. He hastened forward by steamer, hoping to intercept him, but they passed in the night, as Mr. Melville learned when he reached a station called Olekma, where he found a letter from Lieutenant Harber. Lieutenant Berry decided to send Ensign Hunt, who had volunteered, back to join Lieutenant Harber, and Bartlett requested and obtained leave to accompany him. Nindemann also wished to be of the party, but Mr. Melville was unwilling to increase Lieutenant Harber's number without better knowledge of his resources. At this point, accordingly, Ensign Hunt and Bartlett turned back to Yakutsk, while Lieutenant Berry, Mr. Melville, and Nindemann kept on to Irkutsk, where they were joined by Noros, whom they found there with Mr. Jackson, and from Irkutsk they made their way to the Atlantic sea-board and thence to America.

A thorough search of the Delta was made by Lieutenant Harber and his party during the summer, but without avail, and in the autumn Ensign Hunt returned to the United States, bringing with him Bartlett, Leach, Lauterbach, and Manson. Wilson had been ill and had preceded them, while the Indian Aneguin had died of small-pox on the journey. Lieutenant Harber and Master Schuetze asked leave of the Secretary of the Navy to remain another year and make a still more thorough search, part of their plan being to visit Semanovski Island. Permission was given, and they were charged also with the duty of bringing back to the United States the remains of Lieutenant-Com-

mander De Long and his comrades from the tomb on the Lena Delta, for which purpose the United States government had appropriated the sum of twenty-five thousand dollars. They made the search, but did not visit Semanovski Island, and in the spring of 1883 reached Yakutsk, bringing with them the remains.

One further attempt by the United States government to communicate with the Jeannette during her absence should be noted. In the spring of 1881 the United States Steamer Alliance, Commander George H. Wadleigh, at the instance of Mr. Bennett, was ordered to search for the missing vessel between Greenland, Iceland, and the coast of Norway and Spitzbergen, with instructions to proceed as far north as 77° 45′, if it should be possible to get there without danger from the ice. The Alliance cruised throughout the summer and took every means to learn of the Jeannette, and to make known her errand along the coasts and among the fishing vessels, but returned to the United States in the fall without accomplishing the main object of her cruise, though she ascended as high as latitude 82° N., and showed how much could be done with a vessel not originally designed for Arctic exploration.

CHAPTER XXIII.

CONCLUSION.

The Court of Inquiry. — The Points of Instruction. — The Finding of the Court. — The Voyage of the Jeannette and its Word to the Reader.

The loss of the Jeannette and the subsequent fate of the commanding officer and others of the ship's company were made the subject of a court of inquiry, according to the rules of the United States Navy. The court was summoned by the Secretary of the Navy to meet at Washington, October 5, 1882. Commodore William G. Temple was appointed president of the Court, Captain Joseph N. Miller and Commander Frederick V. McNair, members, and Master Samuel C. Lemly, judge advocate. It was instructed "diligently and thoroughly to investigate the circumstances of the loss in the Arctic Seas of the exploring steamer Jeannette, and of the death of Lieutenant-Commander George W. De Long and others of her officers and men." It was also "carefully to inquire into the condition of the vessel on her departure, her management up to the time of her destruction, the provisions made and plans adopted for the several boats' crews upon their leaving the wreck, the efforts made by the various officers to insure the safety of the parties under their immediate charge, and for the relief of the other parties, and into the general conduct and merits of each and all the officers and men of the expedition."

Under this comprehensive order the court conducted its examination during eighty-five days, and received the testimony of the survivors of the expedition, and of a number of persons who had been personally cognizant of the construction, alteration, and equipment of the Jeannette. The log-books and journals of Captain De Long were also read by the court as a part of the testimony. The records of the proceedings of the court form No. 108 of the Executive Documents of the Second Session of the 47th Congress, House of Representatives. The finding of the court is reprinted in full in the Appendix[1] to this volume. It is a summary of the narrative which has been given at length, and a professional judgment upon those points which were contained in the instructions to the court.

The reader who has followed attentively the history of the expedition from its inception to its melancholy close will have anticipated the judgment of the court, and will be enabled to enrich its decisions with a volume of illustrations. In one matter, the proceedings of the court furnish fuller information than this book. It was not thought necessary to burden the unprofessional reader with a detailed description of the measures taken to strengthen the Jeannette for her northern voyage; enough has been given to indicate the character and extent of the work done. In the testimony before the court, the observations of the officers of the Mare Island Navy Yard, and the experience of the officers of the Jeannette, furnish additional evidence; and the reader who has attended to the vivid description which Captain De Long gives of the terrible power of the restless ice will scarcely need to be reminded that no vessel built by the hand of man could

[1] See Appendix I.

resist the ice under certain conditions; and that the Jeannette proved herself in the long struggle to have been exceptionally staunch and seaworthy.

Of the management of the ship up to the time of her loss no evidence could be so conclusive as the daily record, begun with so much eagerness to note every interesting and important fact, continued under circumstances of so much discouragement, and constantly suggestive of the resources of the commander and his associates, their unflagging zeal, their versatility, their cheerful resolution, their devotion to the incidental objects of the expedition, and their thoughtfulness for the health and comfort of the crew. The final loss of the vessel was beyond the power of man to foresee or prevent. "Any vessel in like position," says the court, emphatically, "no matter what her model might have been, or however strongly constructed, and subjected to the same pressures as those incurred by the Jeannette, would have been annihilated." That the abandonment of the vessel was orderly, and the retreat managed with wisdom appears from the fact that "ninety days after the destruction of the Jeannette the officers and men were in fair condition, notwithstanding their terrible journey." So reads the finding of the court; and the narrative drawn from Captain De Long's ice journal, although necessarily compact and more in the form of notes than of an extended record, affords abundant evidence of the strain under which the commander moved through that fearful summer, and of the discipline and order which prevailed among his brave comrades.

The final point upon which the court was to inquire was as to "the general conduct and merits of each and all the officers and men of the expedition." The finding is as follows: —

"There is conclusive evidence that aside from trivial difficulties, such as occur on shipboard even under the most favorable circumstances, and which had no influence in bringing about the disasters of the expedition, and no pernicious effect upon its general conduct, every officer and man so conducted himself that the court finds no occasion to impute censure to any member of the party. In view, then, of the long and dreary monotony of the cruise, the labors and privations encountered, the disappointment consequent upon a want of important results, and the uncertainty of their fate (and apart from a natural desire to tread lightly on the graves of the dead), the general conduct of the *personnel* of the expedition seems to have been a marvel of cheerfulness, good fellowship, and mutual forbearance, while the constancy and endurance with which they met the hardships and dangers that beset them entitle them to great praise. Beside the mention already made, however, special commendation is due to Lieutenant-Commander De Long for the high qualities displayed by him in the conduct of the expedition; to Chief-Engineer Melville for his zeal, energy, and professional aptitude, which elicited high encomiums from his commander, and for his subsequent efforts on the Lena Delta; and to Seamen Nindemann and Sweetman for services which induced their commander to recommend them for medals of honor."

This decision was reached by the court after the fullest hearing of testimony. The reader of "The Voyage of the Jeannette" is in possession of the same general evidence. It is the record of an expedition which set out in high hope, and returned broken and covered with disaster. It is also the record of lives of men subjected to severer pressure than their ship met from

the forces of nature. The ship gave way; the men surmounted the obstacles, and kept their courage and faith to the end. It is, above all, the record of a leader of men who entered the service in which he fell with an honorable purpose and a lofty aim; who endured the disappointment of a noble nature with a patience which was the conquest of bitterness; who bore the lives of his comrades as a trust reposed in him; and who died at his post with an unfaltering faith in God whom he served and loved.

The voyage of the Jeannette is ended. The scientific results obtained were far less than had been aimed at, but were not insignificant. Something was added to the stock of the world's knowledge; a slight gain was made in the solution of the Arctic problem. Is it said that too high a price in the lives of men was paid for this knowledge? Not by such cold calculation is human endeavor measured. Sacrifice is nobler than ease, unselfish life is consummated in lonely death, and the world is richer by this gift of suffering.

Monument Hill, Lena Delta

APPENDIX.

APPENDIX A. (*See page* 48.)

Translation of the Opinion of M. Wilfrid de Fonvieille, Aëronaut, as to the Best Manner of preparing Balloons for Use in the Polar Regions.

The captive balloon established by M. Henry Giffard last summer in the courtyard of the Tuilleries may be considered as offering the type which the constructors of balloons intended for use in the Polar explorations should adopt for model. But in reducing considerably the proportions (which would be absolutely necessary) it becomes indispensable to introduce in the construction of such balloons important modifications which will necessarily be expensive.

It would be imprudent to construct a balloon capable of resisting powerful winds without employing two silk coverings, between which should be placed a strong lining of caoutchouc. The external covering of silk can be made much lighter than the other. This should be covered in its turn by a thin coating of caoutchouc, covered again by muslin varnished over with common flaxseed oil. The balloon of M. Giffard was composed of two linen coverings separated by a lining of unvulcanized India rubber. The two linen coverings can be replaced by two silk tissues, but it is impossible to suppress the external coat of India rubber, which is intended to prevent the oil from penetrating inside and attacking the non-vulcanized rubber as well as the silk covering, which gives to the balloon all its power of resistance, and which, combined with the caoutchouc, imparts to the whole a sufficient elasticity.

But little reliance should be placed on the combinations so imprudently eulogized by aëronauts, but more especially on the so-called *Meudon varnish*, about which the officers of the Engineers make such a mystery.

The seams should be worked by hand, and should be made very

solid. It is important to diminish as much as possible the number of the sections of the cloth composing the balloon, and this can be done by having it woven especially for the purpose; it is also necessary that the greatest care should be taken to insure regularity in cutting them. The joinings should be covered with bands of varnished cloth, but these bands should be made as thin as possible.

It is also advisable to strengthen the head of the balloon round the valve. For this purpose two coverings of the cloth should be used, with a lining of caoutchouc between them, the whole covered with muslin. This might be woven specially, just as a cotton night-cap is made, and extended to a distance of two metres from the valve in spherical sections, arranged in divisions of four or six, as might be deemed advisable.

All the parts of the balloon in the neighborhood of the valve should be varnished internally and externally, to avoid escape of gas by the seams.

The valve should be constructed according to the system of M. Giffard, but should be very much lighter. A model of this valve has been made by M. Comme, and is to be seen at No. 50 Rue Rodier, Paris, at the Exhibition of the Meteorological Academy.

The netting should be constructed in the ordinary manner.

It is not necessary to suppress the knots, and yet if means could be found to execute this part of the work without them it would be found advantageous. It is not absolutely necessary to have a safety valve. It would be preferable to terminate the neck of the balloon by an arrangement of the cloth susceptible of being hermetically contracted, and to which the aeronaut could easily ascend.

There is no means of dispensing with the use of hydrogen gas as the ascending power, and this necessitates the transportation of a large quantity of sulphuric acid, — say from seven to eight thousand kilogrammes for every thousand cubic metres. It would be possible to diminish this quantity by taking the acid, carefully rectified, or even by taking anhydric acid, if the cost be not too great. The iron ought to be in shavings and not in dust. A portion of them should be taken in boxes or barrels not liable to oxydation, which would cause a loss of the acid and of the weight. Before the iron is used it should be well brushed or shaken.

For generators wine or spirit casks which have already served for these liquids can be used with advantage, if care be first taken to see that they do not leak. It would also be advisable to use the apparatus called *l'appareil de dégagement continu*, employed by M.

Giffard, or something analogous to it. Nevertheless, the loss of gas, which is inevitable when the constituent elements are renewed, constitutes a serious objection. It is to be regretted that experiments on the decomposition of steam from water by iron have not been made, for this process would be infinitely preferable. But I dare not recommend it in the imperfect state of information which the scientific world is in with regard to it. And yet the aëronauts of the First Republic inflated their balloons with it during the campaign of 1794.

If it were desired to inflate the balloons of the Polar expedition with decomposed steam, it would be necessary to train the crew of the Jeannette to its employment.

It would be equally indispensable to train the aëronauts by preliminary ascensions at sea, in the neighborhood of vessels, and with attachments composed of guide-ropes with running knots.

The car should be unsinkable, and shaped like a boat or like an ice-sledge, with the anchors and guide-ropes disposed in such a manner that the draft should always be effected from the sides, and not from the ends.

Ascensions should not be made when the thermometer is too low, for there is then a probability that the caoutchouc might be affected by the frost, and might crack.

The flaxseed-oil varnish is the only thing to be relied on, if it be desired to make ascensions under such difficult circumstances.

Efforts should be made to find some means of ascending and descending without sacrificing gas. The experiments which I am making in this regard will be concluded before the end of May, and I shall then be able to give more precise details on the subject.

WILFRED DE FONVIELLE.

PARIS, 15 *March*, 1879.

APPENDIX B. (*See page* 67.)

Shipping Articles for the Naval Service for Persons enlisting on Board of the Arctic Steamer Jeannette.

WE, the subscribers, Petty Officers, Seamen, and others, do, and each of us does agree to and with Lieutenant George W. De Long of the United States Navy :

In the first place, we do hereby agree for the considerations hereinafter mentioned, to enter the service of the Navy of the United States, and in due and seasonable time to repair on board the Arctic Steamer Jeannette, for a cruise to the Arctic Regions, for the purposes of

discovery, exploration, and scientific research; and we do bind ourselves to discharge our several duties or services to the utmost of our power and ability; and to be in everything conformable and obedient to the several requirings and commands of the officers who may, from time to time, be placed over us.

Secondly, we do also oblige and subject ourselves to serve well and truly in carrying out the objects of said cruise to the Arctic Regions from the date of our signing these to the day on which we are discharged from the Naval Service of the United States by competent authority.

Thirdly, understanding and appreciating fully the hardships and dangers to which we may be subjected, and the varied and peculiar duties which we may be called upon to perform, whether as members of a ship's company, portions of an outlying and removed colony, or forming one of a party told off for any particular duty, whether afloat or ashore, on ice or over it, we none the less cheerfully and willingly bind ourselves to unhesitatingly obey such orders as may be given us, and devote to the carrying into effect thereof all our strength and ability; and to strictly observe, comply with, and be subject to such laws, regulations, and discipline of the Navy, as are or shall be established by the Congress of the United States, or other competent authority, and to such especial laws, regulations, and discipline as have been established in this particular case.

Fourthly, recognizing the peculiar situations in which we may be placed, and the extreme importance of carefully guarding against waste or improvidence of any kind, we do each severally bind ourselves to watch over and care for all articles of food, raiment, and equipment; to accept such establishment of food, both as to quantity and quality, as may be directed from time to time by the commanding or other authorized officer; to wear such articles of dress as we may be ordered to wear, changing, altering, or modifying the same at the discretion of said commanding or otherwise authorized officer; and to preserve faithfully the good condition and usefulness of whatever articles of arms or equipment of any kind may be entrusted to our care.

Fifthly, the said Lieutenant George W. De Long, for and in behalf of the United States, does hereby covenant and agree to and with the said seamen, petty officers, and others who have hereunto signed their names, that they and each of them shall be paid, in consideration of such services, the amount per month which, in the column hereunto annexed, headed "Wages per month," is set opposite to their names respectively; or the wages due to the ratings which may, from time to

time be assigned to them during the continuance of their service aforesaid; and likewise to advance to each and every one of them at entrance, due security for the same being first given, the amounts set opposite their respective names in the column headed "Wages advanced," the receipt of all which they do hereby severally acknowledge. It is understood, however, that such payments as are mentioned above shall cease to be made personally upon the departure of the Jeannette from San Francisco, California. The amounts becoming due from time to time shall be regularly credited and accounted for in the books of such pay or disbursing officer as may be indicated beforehand by the Honorable Secretary of the Navy, and such allotments of pay as are desired by the said petty officers, seamen, and others, and allowed by the said Secretary of the Navy, shall be paid by the designated pay or disbursing officer. In the event of no such allotment being made, the amounts becoming due shall be carried forward on the books of the designated pay or disbursing officer until the return of the individual entitled to receive the same, and his discharge from the naval service of the United States; and in the event of the death or loss of any one of the said petty officers, seamen, or others, the amount due and remaining unpaid at the date of such death or loss shall be paid to the widow or next of kin, as provided for by existing laws.

APPENDIX C. (*See page* 68.)

Muster Roll of Officers and Men on Board the Arctic Steamer Jeannette at Date of Sailing from San Francisco for the Arctic Ocean, July 8, 1879.

Lieutenant George W. De Long, U. S. N.	*Commanding.*[1]
Lieutenant Charles W. Chipp, "	*Executive.*
Master John W. Danenhower, "	*Navigator.*[2]
Passed Assistant Engineer Geo. W. Melville, U. S. N.	*Chief Engineer.*[3]
Passed Assistant Surgeon James M. Ambler, U. S. N.	*Surgeon.*
*Mr. Jerome J. Collins	*Meteorologist.*
*Mr. Raymond L. Newcomb	*Naturalist.*

[1] Promoted 1 November, 1879, to be Lieutenant-Commander.

[2] Promoted 2 August, 1879, to be Lieutenant.

[3] Promoted 4 March, 1881, to be Chief Engineer.

* Shipped as seaman, U. S. Navy. The men were all enlisted in the Navy under the Special Shipping Articles given in Appendix B. Every man before acceptance was subjected to a searching physical examination.

*Mr. William Dunbar	*Ice Pilot.*
*John Cole	*Boatswain.*
*William Nindemann	*Ice Qr. Master.*
*Alfred Sweetman	*Carpenter.*
Walter Lee	*Machinist.*
James H. Bartlett	*Fireman.*
Geo. W. Boyd	*2d class Fireman.*
John Lauterbach	*Coalheaver.*
Walter Sharvell	"
Nelse Iversen	"

Seamen.

Louis P. Noros,	Frank E. Manson,
Adolph Dressler,	Carl A. Görtz,
Henry Wilson,	Herbert W. Leach,
Peter E. Johnson,	Edward Starr,
Hans Halmoi Ericksen,	Henry D. Warren,
Heinrich H. Kaack,	Albert G. Kuehne.

*Charles Tong Sing	*Steward.*
*Ah Sam	*Cook.*
Ah Sing	*Cabin boy.*

APPENDIX D. (*See page* 166.)

OFFICERS' BILL OF FARE.

Monday. — Breakfast: Coffee, milk, sugar, bread and butter, bacon, hominy. Dinner: Hard bread, pickles, ox-tail soup, turkey, pie or chicken pie if no bear, potatoes, succotash. Supper: Tea, milk, sugar, bread, butter, boneless ham, apple butter.

Tuesday. — Breakfast: Coffee, milk, sugar, bread, butter, oatmeal, St. Michael's salmon, potatoes. Dinner: Hard bread, pickles, mutton broth with barley, roast mutton, tomatoes, green corn. Supper: Tea, milk, sugar, bread, butter, tongue, corn meal.

Wednesday. — Breakfast: Coffee, milk, sugar, bread, butter, oatmeal, mutton hash. Dinner: Hard bread, pickles, bean soup, pork and beans, raw onions, potatoes, and duff. Supper: Tea, milk, sugar, bread, butter, cold pork, peach butter.

Thursday. — Breakfast: Coffee, milk, sugar, bread, butter, hominy, beef hash. Dinner: Hard bread, pickles, mock-turtle soup, roast beef, canned beans, green peas. Supper: Tea, milk, sugar, bread, butter, beef hash, prunes or dried peaches or canned pears.

Friday. — Breakfast: Coffee, milk, sugar, bread, butter, oatmeal, St. Michael's salmon. Dinner: Hard bread, pickles, pea soup, corn beef, tomatoes and oatmeal, potatoes. Supper: Tea, milk, sugar, bread, butter, cold corn beef.

Saturday. — Breakfast: Coffee, milk, sugar, bread, butter, hominy, corn-beef hash. Dinner: Hard bread, pickles, mutton soup, barley, pemmican if no bear, potatoes, curried rice. Supper: Tea, milk, sugar, bread, butter, pemmican and rice, quince butter.

Sunday. — Breakfast: Coffee, milk, sugar, bread and butter, oatmeal, canned fish, potatoes. Dinner: Hard bread, pickles, beef soup, salt beef if no seal, maccaroni, beets or carrots or onions, duff. Supper: Tea, milk, sugar, bread, butter, kidneys or pig's feet, canned fruit.

Average per day 3 pounds, $15\frac{9}{7}$ ounces each person.

CREW'S BILL OF FARE.

Monday. — Breakfast: Milk, coffee, sugar, bread, butter, sausage if seal the day before, hominy. Dinner: Hard bread, pickles, roast mutton if no bear, potatoes, succotash. Supper: Tea, milk, sugar, bread, butter, mutton hash, apple butter.

Tuesday. — Breakfast: Coffee, milk, sugar, bread, butter, oatmeal, St. Michael's salmon, potatoes. Dinner: Hard bread, pickles, mutton broth and barley, roast mutton, tomatoes, green corn. Supper: Tea, milk, sugar, bread, butter, mutton, cornmeal.

Wednesday. — Breakfast: Coffee, milk, sugar, bread, butter, oatmeal, mutton hash. Dinner: Hard bread, pickles, bean soup, pork and beans, raw onions, potatoes, duff. Supper: Tea, milk, sugar, bread, butter, cold pork, peach butter.

Thursday. — Breakfast: Coffee, milk, sugar, bread, butter, hominy, beef hash. Dinner: Hard bread, pickles, bean soup, roast beef, canned beans, green peas. Supper: Tea, milk, sugar, bread, butter, roast beef, prunes or canned pears or dried peaches.

Friday. — Breakfast: Coffee, milk, sugar, bread, butter, oatmeal, St. Michael's salmon. Dinner: Hard bread, pickles, pea soup, corn beef, tomatoes and ochra, potatoes. Supper: Tea, milk, sugar, bread, butter, corn beef.

Saturday. — Breakfast: Coffee, milk, sugar, bread, butter, hominy, corn beef hash. Dinner: Hard bread, pickles, mutton broth, pemmican if no bear, potatoes, curried rice. Supper: Tea, milk, sugar, bread, butter, pemmican and ground rice, quince butter.

Sunday. — Breakfast: Coffee, milk, sugar, bread, butter, oatmeal, canned fish, potatoes. Dinner: Hard bread, pickles, beef soup, salt

beef if no seal, maccaroni, and potatoes, beets or carrots or onions, duff. Supper: Tea, milk, sugar, bread, butter, seal hash, canned fruit.

Average per day 3 pounds, $15\frac{3}{7}$ ounces each person.

APPENDIX E. (*See page* 251.)

Extracts from a Memorandum by Dr. Ambler on Ice formed by Sea Water.

The following observations were made during the winter of 1879–80, at which time the Arctic Steamer Jeannette was beset in the pack to the north and west of Herald Island, in about 72° to 73° north latitude. As we were out of reach of land, we had to depend for our supply of water either upon the melting of snow or sea water ice, or upon distillation of the sea water itself. The statements of previous explorers that they had no difficulty in procuring a sufficient supply of ice, yielding a pure and potable water, had been accepted, and we had no doubt but that our own experience would be the same.

Expeditions wintering along the land can, of course, always draw their supply of fresh water ice from the shore. Those who were unfortunately compelled to winter in the pack, obtained their supply from pools melted during the summer on the surface of the floe and refrozen. This, possibly, from the probable large admixture of land ice, both from glaciers and water-courses, and from the heavier falls of snow on the Smith's Sound route, may have given an absolutely pure water. Our experience has been different. I have failed to find any ice of any degree of thickness up to five feet, or ice from any pools found on the floe surface that would give a water absolutely free from salt. The snow-fall was not great, and as it was naturally very dry from the extreme cold, it was, of course, readily moved by the wind, and it took but a short time for it to become mingled with the loose granular ice on the surface of the floe. The wind, too, driving it with considerable force, may have caused the crystals to act as a sand-blast on the surface of the hummocks, and thus a mixture of snow and salt water ice made which contained a very large amount of salt. For some time we used water obtained from the ice of pools and from the snow, selecting it with care, and obtained a water that was potable, but not pure, and the use of which should not be long continued. Finally, we could not find it sufficiently pure to warrant its use, and we commenced to distill.

Dr. Kane says that "ice formed at a temperature of 30° Fahrenheit will yield a perfectly pure and potable element." Lieutenant Weyprecht says, that they found ice of a "certain thickness" to yield a pure water. Dr. Kane's statement and the opinions he expressed, are to the effect that the colder the temperature of the air at the time the ice is formed, the less salt will be contained in the ice. Dr. Saunderland of Parry's, and Dr. Walker of McClintock's expedition, express directly contrary views, and my experience leads me to coincide with them. . . . (Tabulated Experiments.) This is simply one of a number of instances which I think prove the fallacy of Dr. Kane's opinion that the colder the temperature the purer sea ice. . . . As to an absolutely pure ice being formed at a temperature of —30° Fahrenheit, I am fully convinced to the contrary, as I have been able to examine ice formed at various temperatures from + 28.5° Fahrenheit to — 50° Fahrenheit, and have failed to find any sea water ice absolutely free from salt. I have equally failed to find the statement of Lieutenant Weyprecht borne out by my experience. It is true that in thick ice you will find less salt in the deeper strata than in the upper, but this is due in a great measure to the fact that the freezing process necessarily goes on more slowly, as the upper strata of ice already formed is a poor conductor.

It may be that I have not had the opportunity of examining ice of the required thickness (Lieutenant Weyprecht does not state how thick), but from my present experience I should expect to find salt in any specimen of sea water ice from wherever obtained.

The following tabulated lists showing the result in a number of experiments noted at the time, and the conditions under which the ice was obtained, are not intended for comparison with each other, except in cases marked, but simply to show the result in the given case. For instance, in No. VIII. of the Table, ice formed at a temperature of — 16.5° Fahrenheit, shows a much smaller amount of salt than *a.* of No. IX. Here the conditions under which they were frozen come into consideration. No. VIII. was taken from "Fire Hole" or surface of the sea, where there was a more or less free movement of the water, whereas No. IX. was frozen in a bucket, or rather tub, of a slightly conical shape (which is an important factor). And also a certain amount of efflorescence had taken place from No. VIII., and not from No. IX. To compare the results obtained from any two specimens you should know precisely all the conditions under which the ice was formed. In the two specimens given in No. IX. (*a.*, *b.*), I took equal quantities of water obtained at the same time and exposed for the

same length of time in similar vessels, but at different temperatures, collecting the ice from each, and examining it at the same time.

Number of Experiments.	Where obtained.	Thickness of ice.	Mean temperature at which frozen.	Specific gravity.	At a temperature Fahrenheit of	Chlorine per gallon estimated as sodium chloride.
		Inches.				Grains.
I.	Sea Water.			1.027	32°	2045
II.	Floe-piece thrown up by pressure, exposed to atmospheric changes for some time, and from which efflorescence had taken place.	45	— 17.3°			
	a. Water from upper 5 inches.			1.007	60°	548.06
	b. Water from lower 5 inches.			1.003	67°	347.25
III.	Water from ice of pool in old ice floe.					8.18
IV.	Water from mixed snow and surface ice.					28.43
V.	Water from melted efflorescence on young ice.					
VI.	Sea water exposed 19 hours in tub.					4253.6
	a. Water of entire thickness.	$4\frac{1}{8}$	— 24.2°	1.0175	51°	1349.7
	b. " " upper 2 inches.			1.019	48°	1922.3
	c. " " lower $2\frac{1}{8}$ "					932.52
VII.	Ice remaining from No. VI. collected, melted, and refrozen at a temperature above zero not precisely known.	$1\frac{1}{4}$		1.0025	55°	143.15
VIII.	Water from ice formed in "Fire Hole."	$2\frac{1}{2}$	— 16.5°	1.016	35°	1096.12
IX.	Sea water, equal quantities, put in similar vessels, exposed for the same length of time at different temperatures.					
	a. Water exposed on deck.	3	— 6°	1.029	32°	2535.8
	b. " " in porch.	2	+ 5.6°	1.025	32°	1717.8
X.	Six inches of ice from which efflorescence had been removed.	6	— 39°	1.012	32°	797.1
1881, March 7.						

APPENDIX F. (*See pages* 509–512.)

Memoranda of Design for Construction and Fitting of a Vessel for Arctic Exploration.

By George W. Melville, Chief Engineer, U. S. N.

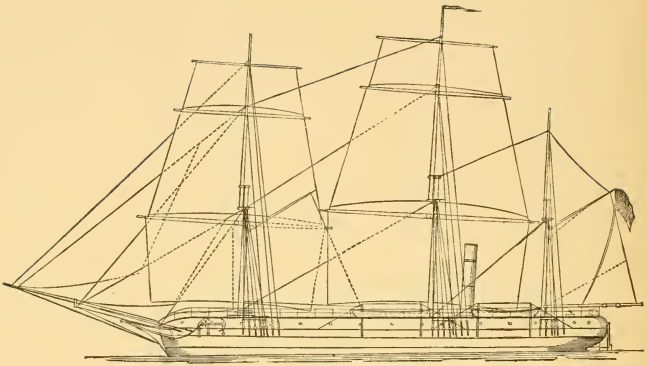
A ship for Arctic cruising should be as small as possible, and yet be able to carry her weight and billet her people with comfort. A light draft is desirable to enable her to clear unknown shoals in strange

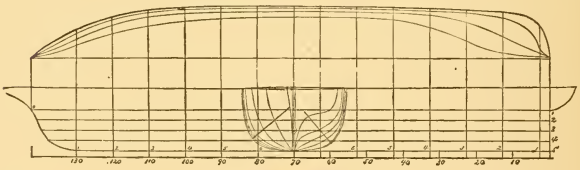
waters, and to seek safety in shallow harbors out of the way of running ice. The "dead rise" should be made great, for it gives a vessel more of a tendency to rise when nipped or underrun by ice, thus exposing less of her body to the ramming and underriding of ice floes. A kettle-bottomed ship is to be avoided, for every consideration of safety. The only reason for building ships thus is because of their carrying capacity, — for their "great bowels," as the sailors say.

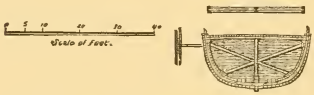
Great speed is not necessary in an Arctic ship; it would only result in her destruction if injudicious or accidental ramming should take place, although great power is requisite at times to enable her to force her way through ice obstructions. A coincidence has occurred in our last two American Arctic cruisers. The Polaris and Jeannette both had their "fore-foot" damaged, so as to cause continuous pumping while their crews remained with them, and in the end the Jeannette had her keel pushed right out of place, bursting open her garboard strakes, letting the water *up through her bottom*. Moral: Have neither keel or stem piece to expose to this danger. Have a false keel that will *be pushed off its place, not out of its place*, and fore-foot and wood ends enclosed or encased in iron sheathing around the bows, not on the surface of the water alone, but to go all the way down to and beyond the fore-foot, and clamp the whole together. Narrow bars of iron are a snare. The whole surface of the ship should be covered by one fourth inch sheeting of mild steel, for the following reasons: The ice of the Arctic Ocean is as hard as marble, and when the square edge of a floe-piece comes against the side of a wooden ship it does not glance off or slip by: it cuts and gouges in; the soft wood yields, and where an iron-sheathed ship would slip up out of the grasp of the ice like a greased pig from the hands of a clown, the unsheathed ship would be held fast and crushed. Again, if the frames and planking of an iron-sheathed ship were crushed, the sheathing would prevent the rapid inflow of water into the ship, after the manner of a sail as applied to a damaged ship's bottom. Pure air and freedom from dampness are as essential to the health and comfort of a ship's company as pure water and good food. This can only be accomplished by billeting every one above the spar deck, and having a condensing chamber surround the apartment of the people to collect the moisture. Heretofore, it was supposed that it would be too cold to quarter men above the spar deck, but in the Jeannette the driest and warmest place in the ship was in the trunk cabin above the spar deck, and the rudely made deck house forward was always comfortable in winter time. In this ship the men's quarters are in the centre of the ship, on the spar deck,

with a three-foot space all around it, and a low pilot house for the man at the wheel to stand inside the quarters and steer his trick at the wheel; another wheel being fitted aft for fine weather or sailing the ship by the wind.

Economic systems of heating the ship and distilling water for potable purposes are requisite and necessary, and I have no hesitancy in saying that the freedom from scurvy enjoyed by the ship's company of the Jeannette was wholly due to the system of ventilation, the use of distilled water, and a liberal supply of food. For this purpose a heater and distiller are designed for cabin and forecastle, and the steam after heating the apartments is condensed and used for drinking purposes. A ship in the vicinity of glacier ice can dispense with the steam heater, and use the less expensive system of stoves for heating. To carry out these economic and sanitary arrangements a large supply of coal is necessary: the ship as designed can stow two hundred tons of coal. For ease and rapidity of working cargo an auxiliary boiler and engine is fitted, which can also be used for working ship, raising the propeller, receiving and discharging stores, unshipping the rudder in time of danger; and in case of the ship springing a leak the auxiliary engine can be used to work one or all six bilge pumps. Then these pumps are of the simplest and most efficient kind, and can be worked by hand while steam is being prepared. The bulkheads are fitted in such a manner that they cannot leak, the *inner and outer planking of the ship being fitted and caulked against a double frame*, and the bulkheads in turn fitted to inner skin of ship, as set forth in the drawings; so that the bulkheads, in addition to being as strong a truss as can be put in a ship, are watertight. No sluice valves are needed, although fitted as a pair of pumps that can be worked by hand or steam to each compartment. One peculiarity of the ship is that the rudder can be lifted at any time, even while the ship is under way, and can be used at any immersion from a foot of water near the surface all the way down to its full draft of water. There is no lock, and the rudder is outside of all parts of the ship, after the manner of a Dutch galliot, and is made to slide up or down a bobb iron in lieu of gudgeons and pintles. The iron plating is put on in a peculiar manner with wood screw bolts, the edges of the sheets being beveled, and the bolt holes placed and countersunk in such a manner as to give a clean, smooth surface to the ship's bottom and sides. The keel is fastened on outside of the plating, and in case of a great strain being brought on the keel it is pushed off and lost without material damage to the ship except sailing quality. A light house and deck



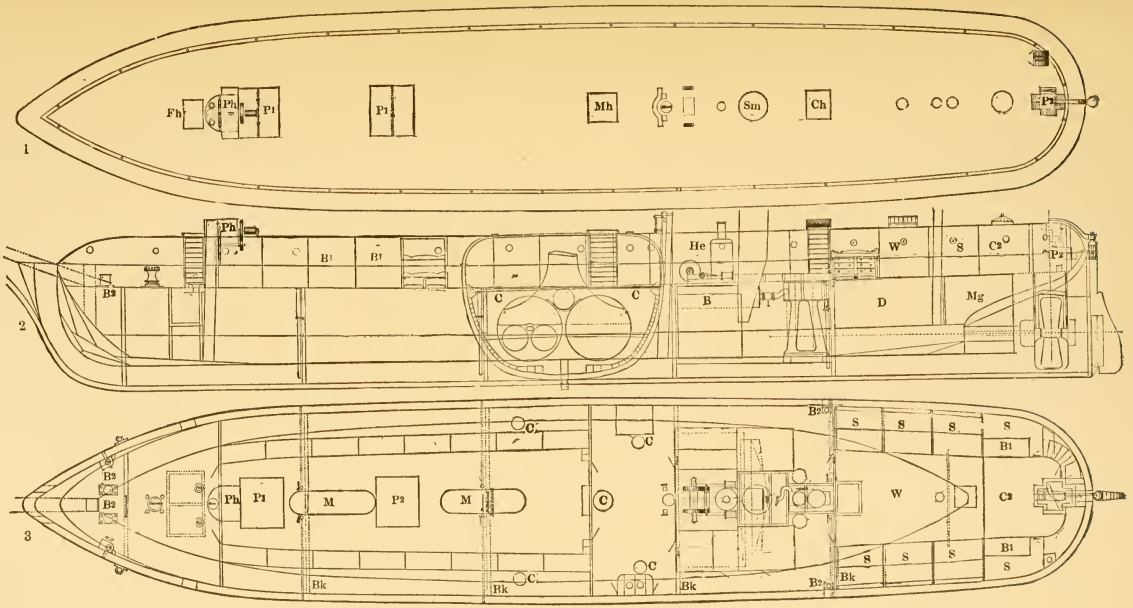




SHEAR, HALF-BREADTH, AND BODY PLANS
Showing arrangement of bulkhead and water-stop frames in wake of bulkhead.

A VESSEL DESIGNED FOR ARCTIC EXPLORATION.

Note. The designs for this vessel were the work of Chief-Engineer Melville in the last winter when the Jeannette was in the pack. He submitted them to Lieut.-Commander De Long, who gave them his approval. For description, see Appendix G.



SPAR DECK (1), BERTH DECK (2), HOLD PLAN (3).

B, Boilers.
B1, Berths.
B2, Bitts.
Bk, Bulkheads.

C, Coal.
C2, Cabins.
Ch, Companion Hatch.
D, Dry provisions

Fh, Fore Hatch.
He, Hoisting Engine.
M, Mess Tables.
Mg, Magazine.

Mh, Main Hatch.
Ph, Pilot House.
P1, Provision Hatch.
P2, Propeller Well.

S, State Rooms.
Sm, Smoke Pipe.
W, Ward Room.

cover in such manner that all people are accommodated above the water line, and the whole of the bowels of the ship are given up to engine, coal, and stores; a fair division of the cabin space is allotted to each person, and the berths are made movable, so as to remove any ice that may form against the cold sides of the ship. Drying room, bath room, closets, instrument room, photographer's dark room, and dispensary are all in convenient position and roomy. Cook house for officers and crew, and pantries to suit, are all arranged on the spar deck. Provisions are stowed forward, coal amidship, clothing and fine stores aft. Compound engine and boilers of the most approved type to be fitted. General dimensions of ship from flank ends forward to forward rabbet of stern post 140 feet on water line, 38 feet beam, 12 feet draft. All of the foregoing requirements are fitted in the ship in question, and fully set forth in the drawings.

APPENDIX G. (*See page* 657.)

Some Remarks of Dr. Ambler on Snow Crystals, etc.

After an experience of two seasons in the Arctic, I have no hesitation in saying that the variety of snow formations is as numerous, if not more so, than in more temperate climates. Without having made any special study of snow crystals I have been in the habit of observing them for years, and I can fairly presume that I am as familiar with the different formations as are most people. For some time past I have paid especial attention to the subject, and have found myself fully repaid for the trouble.

I will endeavor to give as clear a description as possible of what I have seen, and for the accuracy of which I will vouch; and will undertake to show any one accustomed to the use of a microscope. As for the deductions I make from the premises they must stand or fall on their own merits.

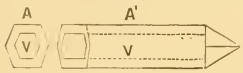
It is not necessary for me to point out the well-known utility of the hexagon in pattern drawing, but to the fact that water crystallizes in this system may be ascribed all the beauty and variety of the snow-flower.

The basic water crystal is the right hexagonal prism; the hexagonal pyramid occurs less frequently, the prism most often ending abruptly in an hexagonal plane, but sometimes being complimented by the adhesion of the pyramid. The length of the prism varies from

$\frac{1}{100}$ to $\frac{1}{50}$ of an inch. few being as large as the $\frac{1}{50}$, the breadth being as one to three.

The various forms and patterns of the snow-flower are due in great measure to the amount of saturation of the air stratum in which they are congealed. The more complete the saturation the larger and coarser the formation; the smaller the degree of relative humidity the finer and more beautiful the patterns. The so called "diamond dust" falling from a clear sky shows the prism in its most perfect condition; each little amorphous-looking mass is really made up of a number of crystals sometimes showing the most beautiful patterns, to which the large snow-flower, by comparison, is crude and rough.

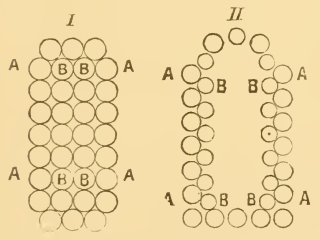
The method of attachment between the crystals is usually butt to butt, and they do not often lie across one another. The adhesion between any two crystals of that character is called striction. Very small hexagonal scales under the microscope are seen to be built up of a number of what appear to be smaller hexagonal plates, but which are really the ends or butts of a number of hexagonal prisms which you are looking down upon, the thickness of the scale being the longitudinal diameter of the prisms.



Frequently you will be able to make out in the crystal (by proper manipulation of light) the vacua marked in the accompanying sketch, "A and A'," giving the two views.

I account for the formation of vacua in the following way: When the molecule (as I am inclined to think the molecular group which forms the practical working unit of water) loses heat the process is as follows: —

Let Fig. I. represent a section through the middle of the molecular group, and which simply for convenience we can conceive to be formed of only two layers of molecules, A. and B. Now as the outer layer of molecules A. must necessarily lose heat sooner by radiation than the inner layer B., the temperature of any molecule A. will fall below the temperature of any molecule B. that lies within. As soon, however, as this occurs, molecule B. will give up some of the excess of heat to A., which will again radiate it; and so on, until B. gives up all of its heat, A. receiving the last unit, and



then B. freezes while A. radiates this last unit into space. This process, of course, goes on through the whole group.

While this loss of temperature is going on there is an accompanying change taking place. The molecules A. and B. (B. more rapidly than A.), in obedience to the universal law of nature, are contracting upon themselves, and B., moreover, in obedience to another and invariable law, is contracting and crystallizing in the direction of A., the surface through which it loses heat. And hence we find the two rows of molecules B., which in Fig. I. touched each other in the centre of the group, are in Fig. II. drawing away from each other, and are concentrating and crystallizing in and between molecules A. Molecules A., being still liquid or plastic, yield to the pressure, and allow a different molecular grouping; so that, although they themselves have obeyed the same invariable law, yet the difference of time at which they have done so has allowed a sufficient number of the molecules B. to be thrust between them, and thus more than make up for their own contraction, and hence the resultant ice-crystal will present a greater superficies than the molecular group of H_2O, from which it was formerly, and should naturally present a vacuum in its centre.

As an example of the increase of superficial surface by an alteration of the molecular arrangement, we have only to refer to the common soap bubble. Of course no similarity of production is implied, but the result is the same in a degree.

So it follows that, if the reasoning is true, the so-called "expansion of ice" cannot be looked upon as a special providence for the little fishes, but must be regarded as another manifestation of the invariable and immutable course of Nature's law.

April 1*st*, 1881.

APPENDIX H. (*See page* 682.)

TIDE MEASUREMENTS MADE AT BENNETT ISLAND,

July, August, 1881.

	A. M.	Feet.	Inches.		A. M.	Feet.	Inches.
July 30,	10.26	1	$2\frac{1}{4}$		3.26	0	9
	11.26	0	$8\frac{1}{2}$		4.26	1	4
	P. M.				5.26	1	$11\frac{1}{4}$
	12.26	0	$4\frac{3}{4}$		6.26	2	$5\frac{1}{4}$
	1.26	0	$3\frac{1}{2}$		7.26	2	8
	2.26	0	5		8.26	2	$6\frac{1}{2}$ [1]

[1] Rise of 2 feet, $4\frac{1}{2}$ inches.

		Feet.	Inches.
	A. M.		
	9.26	1	$10\frac{1}{2}$
	10.26	1	5
	11.26	1	$0\frac{1}{2}$
	A. M.		
July 31,	12.26	0	$7\frac{1}{4}$
	1.26	0	$5\frac{1}{2}$ [2]
	2.26	0	$5\frac{3}{4}$
	3.26	0	10
	4.26	1	$4\frac{1}{2}$
	5.26	1	11
	6.26	2	$5\frac{1}{2}$
	7.26	2	$8\frac{1}{2}$
	8.11 (H. W.)	2	9 [3]
	8.26	2	8
	9.26	2	$4\frac{3}{4}$
	10.26	1	$10\frac{1}{2}$
	11.26	1	$7\frac{1}{2}$
	P. M.		
	12.26	0	$10\frac{1}{4}$
	1.26	0	$7\frac{1}{2}$
	2.11 (L. W.)	0	$7\frac{1}{4}$
	2.26	0	8
	3.26	0	$9\frac{1}{2}$
	4.26	1	3
	5.26	1	10
	6.26	2	$5\frac{1}{2}$
	7.26	2	9
	7.56 (H. W.)	2	10
	8.26	2	$9\frac{1}{2}$
	9.26	2	$5\frac{3}{4}$
	10.26	1	$11\frac{1}{2}$
	11.26	1	5
	A. M.		
Aug. 1,	12.26	0	$11\frac{1}{4}$
	1.26	0	$7\frac{1}{2}$
	1.54 (L. W.)	0	7
	2.26	0	$7\frac{1}{8}$
	3.01	0	7
	3.21	0	$9\frac{1}{2}$
	4.26	1	$2\frac{3}{4}$
	5.26	1	9
	6.26	2	2
	7.26	2	$8\frac{1}{2}$
	8.04 (H. W.)	2	$9\frac{3}{4}$
	8.26	2	$9\frac{1}{2}$
	9.26	2	$7\frac{3}{4}$
	10.26	2	2
	11.26	1	$8\frac{1}{2}$

[2] Fall of 2 feet, $2\frac{1}{2}$ inches.

		Feet.	Inches.
	P. M.		
	12.26	1	$1\frac{1}{2}$
	1.26	0	8
	2.26 (L. W.)	0	7
	3.26	0	10
	4.26	1	2
	5.26	1	$8\frac{1}{2}$
	6.26	2	$2\frac{3}{4}$
	7.26	2	$8\frac{1}{4}$
	8.26 (H. W.)	2	11
	9.26	2	9
	10.26	2	4
	11.26	1	$9\frac{1}{2}$
	A. M.		
Aug. 2.	12.26	1	$3\frac{1}{2}$
	1.26	0	11
	2.26	0	$9\frac{3}{4}$
	2.42 (L. W.)	0	$9\frac{1}{2}$
	3.26	0	10
	4.26	1	2
	5.26	1	8
	6.26	2	$2\frac{1}{4}$
	7.26	2	$8\frac{1}{4}$
	8.26 (H. W.)	2	$11\frac{7}{8}$
	9.26	2	$10\frac{7}{8}$
	10.26	2	$7\frac{3}{4}$
	11.26	2	$2\frac{3}{4}$
	P. M.		
	12.26	1	$8\frac{1}{2}$
	1.26	1	2
	2.26	1	$0\frac{1}{2}$
	2.56 (L. W.)	0	$11\frac{1}{4}$
	3.26	0	$11\frac{1}{2}$
	4.26	1	$1\frac{3}{4}$
	5.26	1	6
	6.26	2	$0\frac{1}{2}$
	7.26	2	$6\frac{1}{4}$
	8.26	2	10
	9.16 (H. W.)	2	$11\frac{1}{4}$
	9.26	2	11
	10.26	2	$8\frac{1}{2}$
	11.26	2	$3\frac{1}{4}$
	A. M.		
Aug. 3,	12.26	1	$10\frac{1}{4}$
	1.26	1	$5\frac{1}{4}$
	2.26	1	1
	3.16 (L. W.)	1	$0\frac{1}{4}$
	3.26	1	$0\frac{1}{2}$
	4.26	1	3
	5.26	1	7

[3] Rise of 2 feet, $3\frac{1}{2}$ inches.

	A. M.		Feet.	Inches.
	6.26	. . .	2	$0\frac{1}{4}$
	7.26	. . . .	2	$6\frac{1}{4}$
	8.26	. .	2	$11\frac{1}{4}$
	9.13	. (H. W.)	3	1
	9.26	. . .	3	$0\frac{3}{4}$
	10.26	. . . .	2	$10\frac{3}{4}$
	11.26	. . .	2	$6\frac{1}{2}$
	P. M.			
	12.26	. . . .	2	$1\frac{3}{4}$
	1.26	. . .	1	$8\frac{1}{4}$
	2.26	. . . .	1	4
	3.26	. . .	1	$2\frac{1}{8}$
	3.41	. (L. W.)	1	2
	4.26	. . .	1	$2\frac{7}{8}$
	5.26	. . . .	1	$5\frac{1}{4}$
	6.26	. . .	1	$10\frac{1}{2}$
	7.26	. . . .	2	$3\frac{3}{4}$
	8.26	. . .	2	8
	9.26	. . . .	2	11
	10.26	. (H. W.)	2	$11\frac{3}{4}$
	11.26	. . .	2	$8\frac{1}{4}$
	A. M.			
Aug. 4.	12.26	. . .	2	$4\frac{1}{4}$
	1.26	. . . .	1	$10\frac{1}{2}$
	2.26	. . .	1	$7\frac{1}{2}$
	3.26	. . . .	1	$4\frac{1}{2}$
	3.56	. (L. W.)	1	$3\frac{3}{4}$
	4.26	. . . .	1	4
	5.26	. . .	1	$6\frac{1}{2}$
	6.26	. . . .	1	$10\frac{1}{2}$
	7.26	. . .	2	$3\frac{1}{4}$
	8.26	. . . .	2	$8\frac{1}{2}$
	9.26	. . .	2	$11\frac{1}{2}$
	10.26	. (H. W.)	3	$0\frac{3}{4}$
	11.26	. . .	2	11
	P. M.			
	12.26	. . . .	2	6
	1.26	. . .	2	1
	2.26	. . . .	1	$9\frac{1}{2}$
	3.26	. . .	1	6
	4.26	. (L. W.)	1	$4\frac{3}{4}$
	5.26	. . .	1	$5\frac{3}{4}$
	6.26	. . . .	1	$8\frac{1}{2}$
	7.26	. . .	2	$0\frac{1}{4}$
	8.26	. . . .	2	$5\frac{1}{2}$

	P. M.		Feet.	Inches.
	9.26	. . .	2	$9\frac{1}{2}$
	10.26	. (H. W.)	2	10
	11.26	. . .	2	9
	A. M.			
Aug. 5.	12.26	. . . .	2	6
	1.26	. . .	2	$1\frac{1}{4}$
	2.26	. . . .	1	$9\frac{1}{4}$
	3.26	. . .	1	$6\frac{1}{4}$
	4.26	. (L. W.)	1	$4\frac{1}{2}$
	5.26	. . .	1	$6\frac{3}{4}$
	6.26	. . . .	1	9
	7.26	. . .	2	$0\frac{1}{2}$
	8.26	. . . .	2	5
	9.26	. . .	2	$8\frac{1}{2}$
	10.26	. . . .	2	$11\frac{1}{4}$
	11.6	. (H. W.)	3	0
	11.26	. . . .	2	$11\frac{1}{2}$
	P. M.			
	12.26	. . .	2	9
	1.26	. . . .	2	$5\frac{1}{2}$
	2.26	. . .	2	$1\frac{1}{2}$
	3.26	. . . .	1	9
	4.26	. . .	1	$6\frac{1}{2}$
	4.56	. (L. W.)	1	6
	5.26	. . .	1	$6\frac{3}{4}$
	6.26	. . . .	1	7
	7.26	. . .	1	9
	8.26	. . . .	2	$1\frac{1}{4}$
	9.26	. . .	2	$4\frac{1}{2}$
	10.26	. . . .	2	7
	11.26	. . .	2	$8\frac{1}{2}$
	11.56	. (H. W.)	2	9
	A. M.			
Aug. 6.	12.26	. . .	2	$8\frac{3}{4}$
	1.26	. . . .	2	$5\frac{1}{2}$
	2.26	. . .	2	2
	3.26	. . . .	1	11
	4.26	. . .	1	9
	5.26	. (L. W.)	1	$8\frac{1}{4}$
	6.26	. . .	1	9
	7.26	. . . .	1	11
	8.26	. . .	2	2
	9.26	. . . .	2	$6\frac{1}{2}$
	10.26	. . .	2	$9\frac{3}{4}$
	11.26	. (H. W.)	3	$1\frac{1}{4}$

[4] 0 mark = 0 feet, $5\frac{1}{2}$ inches of scale very nearly.

Tidal observations cease. Last man left island about one P. M.

APPENDIX I.

Report of the Court of Inquiry convened at the Navy Department, Washington, D. C., by Virtue of an Order signed by the Hon. William E. Chandler, Secretary of the Navy, to Investigate the Circumstances of the Loss of the Exploring Steamer Jeannette.

Commodore William G. Temple, United States Navy, president; Master Samuel C. Lemly, United States Navy, judge-advocate.

February 12, 1883.

In conformity with a joint resolution of the Congress, approved August 8, 1882, and in compliance with the orders of the honorable Secretary of the Navy, dated September 29, 1882, the court of inquiry has diligently and thoroughly investigated —

The circumstances of the loss in the Arctic seas of the exploring steamer Jeannette, and of the death of Lieut.-Commander George W. De Long, and others of her officers and men.

The court has also carefully inquired —

Into the condition of the vessel on her departure, her management up to the time of her destruction, the provisions made and plans adopted for the several boats' crews in their leaving the wreck, the efforts made by the various officers to insure the safety of the parties under their immediate charge, and for the relief of the other parties, and into the general conduct and merits of each and all the officers and men of the expedition.

And the court transmits herewith its proceedings, the testimony taken, and after mature deliberation reports that the following facts are deemed established by the evidence adduced: —

First. As to "the condition of the vessel on her departure."

The Jeannette was originally her Britannic Majesty's ship Pandora, and was purchased from the British government in April, 1875, by Sir Allen W. Young, who made two voyages in her to the Arctic regions, and who finally sold her to Mr. James Gordon Bennett in 1877.

By an act of Congress approved February 27, 1879, she was accepted under certain conditions by the United States government for the purpose of making further explorations in the Arctic regions, and although the weight of the evidence shows that she was not especially adapted in strength or model for that kind of navigation, the fact that an experienced Arctic explorer had voluntarily made two cruises in her to the Arctic seas sustains the judgment and care shown in her selection when last purchased.

The vessel was strengthened as much as practicable at the navy-yard,

Mare Island, California, and such other additions and improvements were made as were recommended by her commanding officer; and the condition of the Jeannette on her departure from the port of San Francisco was good, and satisfactory to her officers and crew, except that she was unavoidably deeply loaded, a defect which corrected itself by the consumption of coal, provisions, and stores.

Second. As to "her management up to the time of her loss."

The lateness of the season when the Jeannette sailed from San Francisco, her want of speed, and the delay occasioned by her search along the Siberian coast, under orders from the Navy Department, for the Swedish exploring steamer Vega, placed the commander at a great disadvantage on his meeting with the pack ice early in September, in the vicinity of Herald Island. Either he had to return to some port to the southward, and pass the winter there in idleness, thus sacrificing all chance of pushing his researches to the northward until the following summer, or else he must endeavor to force the vessel through to Wrangel Island, then erroneously supposed to be a large continent, to winter there, and prosecute his explorations by sledges. The chances of accomplishing this latter alternative were sufficiently good at the time to justify him in choosing it; and, indeed, had he done otherwise, he might fairly have been thought wanting in the high qualities necessary for an explorer.

This attempt unfortunately resulted in the vessel's becoming beset in the ice pack within less than two months after her departure from San Francisco, from which she was never released until her destruction, more than twenty-one months later.

During these weary months of forced inaction the vessel and her people were at times threatened with great dangers. Especially was her destruction imminent on January 19, 1880, when she sprung a leak from ice pressures, and for months after that date she was kept afloat only by skillful devices and arduous labor.

It may be here mentioned that throughout the expedition every opportunity was improved for gaining scientific information. Meteorological and astronomical observations, temperature and density of the sea water, and soundings were taken and preserved; studies of the character and action of the ice were noted; specimens of the bottom and of such fauna and flora as could be procured were examined. Three islands were discovered, two of which were visited, explored, and taken possession of in the name of the United States.

The arrangements to abandon ship at a moment's warning, and to guard against fire, were all that could be desired, and the evidence

shows that in the management of the Jeannette up to the time of her destruction Lieutenant-Commander De Long, by his foresight and prudence, provided measures to meet emergencies, and enforced wise regulations to maintain discipline, to preserve health, and to encourage cheerfulness among those under his command; and the physical condition of the people was good, with the exception of a few cases of lead-poisoning, the result of eating canned provisions. The fact of the ship's having passed a second winter in the pack without any appearance of scurvy on board sufficiently attests the excellence of the sanitary arrangements adopted, and reflects great credit upon her medical officer, Passed Assistant Surgeon James M. Ambler, who throughout the expedition was indefatigable in the performance of his duties.

Third. As to the circumstances of the loss in the Arctic seas of the exploring steamer Jeannette.

The Jeannette was sunk on June 13, 1881, from being crushed by the ice in latitude 77° 15′ north; longitude 155° 50′ east, after drifting uncontrollably in the pack ice since September 6, 1879. Any vessel in like position, no matter what her model might have been, or however strongly constructed, and subjected to the same pressures as those incurred by the Jeannette, would have been annihilated.

She was abandoned in a cool and orderly manner on the evening of June 12, and foundered about 4 A. M. the day following, and the court attaches no blame to any officer or man for her loss.

Fourth. As to "the provisions made and plans adopted for the several boats' crews upon their leaving the wreck."

The contingency of the loss of the vessel had been foreseen and provided for, and when the emergency arose, everything was prepared to meet it.

The officers and men were divided into three parties and assigned to the boats best fitted for the anticipated work; boat and provision-sledges had been provided, and more boats, clothing, provisions, and stores were removed from the vessel than could be transported on the retreat.

The party being thus thrown upon the ice, five days were passed in arranging for the long journey to the land, and the provisions made and plans adopted for the several boats' crews upon their leaving the wreck were judicious, as the evidence shows that ninety days after the destruction of the Jeannette the officers and men were in fair condition, notwithstanding their terrible journey.

Fifth. As to "the efforts made by the various officers to insure the safety of the parties under their immediate charge, and for the relief of the other parties."

The retreat commenced on the 18th of June; and during the ensuing three months the entire ship's company remained together, under the direction of the commander, struggling against obstacles which required indomitable pluck and perseverance to overcome — compelled to drag their heavy boats and loads of provisions over broken and shifting fields of ice, at times ferrying them over the water-spaces, and often carried far out of their course by the drift of the pack, delayed by storms, fogs, and snows; there seems to have been no precaution neglected which would tend to insure their safety. During this time, as well as upon other occasions, the conduct of Ice Pilot Dunbar, Boatswain Cole, and Fireman Bartlett elicited well-deserved commendations.

The original plan of retreat was to make a southerly course, presumably, to reach the open water as soon as possible, and thence by way of the New Siberian Islands to the delta of the Lena, the nearest point at which it was supposed that relief could be obtained. But the commander found after a time, by observation, that the current was sweeping them so rapidly to the northward and westward that their labor was almost in vain, and that the course made good was but little to the southward of west. He wisely refrained from discouraging the party by announcing this fact, and changed his course so as to cross this current at right angles, and get beyond its influence as soon as practicable.

After twenty-three days of toil and anxiety, Bennett Island was discovered, where they landed, and occupied eight days in resting and making necessary repairs to boats. In trying to reach this island the party suffered many disappointments and encountered unexpected dangers, difficulties, and delays in overcoming a very short distance, owing to the swift currents and rapid movements of the broken ice close to the shore.

A further delay, from August 19 to August 29, was afterwards forced upon the party by the condition of the ice, which rendered progress impossible. Meantime it had been deemed expedient at Bennett Island, in order to save food for the men, that about half of the dogs should be killed, as they were no longer needed to drag the sleds, and it was considered inhuman to leave them there to starve, and afterwards all but two of them escaped on the ice; but still it was found necessary to reduce the allowance of provisions from time to time during the remainder of the journey.

On the 12th of September the three boats were separated in a gale of wind when approaching the Siberian coast, at an estimated distance of about ninety miles to the northward and eastward of the Lena Delta, and no further record exists of the second cutter's party; but as Lieu-

tenant Chipp, who was in charge of her, was noted for his seamanlike qualities, it may safely be assumed that he did all that a brave and capable man could do to weather the gale.

The first cutter and whale-boat, under the command respectively of Lieutenant-Commander De Long and Chief-Engineer Melville, barely managed to live through the gale by riding to sea-anchors, and in rounding to, the first cutter carried away the step of her mast, and the next day lost her sail, which formed a portion of her drag. During the gale the professional services of Lieutenant Danenhower, who was on the sick list, were called into requisition, and he is deserving of credit for the skill with which he managed the whaleboat, as well as for her subsequent navigation to the land.

When the weather moderated, both boats endeavored to reach Cape Barkin, the northeast point of the Lena Delta, upon which the charts erroneously indicated winter huts and inhabitants.

The whaleboat, with eleven people on board, on striking shoal water out of sight of land, stood to the eastward, and hauling in for the land the next day, she was fortunate enough, on September 16, to enter one of the eastern mouths of the Lena River, and three days afterwards fell in with natives, who guided them to the village of Geeomovialocke, where they arrived on the 25th, and subsisted until they were able to communicate with the commandant of Bulun.

In the mean time, the first cutter, with fourteen persons in all, had made the best of her way under a jury mast and sail towards the land; but encountering young ice and shoal water, the party, on the 17th of September, was forced to abandon the boat a mile and a half from the beach, and to wade ashore through the ice and mud, carrying the few remaining stores and provisions on their backs. They had the misfortune to land at the mouth of one of the northern outlets of the Lena River, where no inhabitants were to be found, although a considerable village, not indicated on their charts, and consequently unsuspected by them, lay some twenty-five miles to the westward.

They had landed frost-bitten and exhausted, with only a few days' provisions, which were eked out by a meagre supply of game. They began their painful journey to the southward, hampered in their movements by those who were disabled, but encouraged from time to time by traces of frequent occupancy in the huts, and footprints about the fox-traps which they encountered on the way, and they struggled on manfully, misled by their imperfect map of the country, and always imagining themselves near a place of refuge, until toward the end of October, when, after eating their remaining dog, they perished from hun-

ger and cold, all but two — Seamen Nindemann and Noros, whom the commander had previously sent on in advance for assistance, and who, after great hardships, were found and rescued by the natives. These two men did their utmost to make the natives understand the condition of the commander's party, and to induce them to go to its relief, but without success. It seems that there was some confusion in the minds of these people between the commander's party and that under Mr. Melville at Geeomovialocke, but the two seamen knew nothing of the whaleboat's fate, and could not therefore guess at the mistake; nor is it probable that if they had returned they would have found any of the commander's party alive.

Meanwhile the whaleboat's party remained five weeks at Geeomovialocke, living upon the limited hospitality of a few poor natives, who saw their winter supplies rapidly disappearing before the hunger of this large party. They, like the first cutter's crew, had landed frost-bitten and exhausted, and being ill-fed, and badly clothed and lodged, they were many days in regaining their strength.

Efforts were made from the first, but without avail, to get transportation for the party to a place of permanent safety, and also to institute a search for the other parties, which nevertheless they believed to have been lost in the gale.

Lieutenant Danenhower started on the 17th of October, with a dog team, to explore the coast for the missing boats, but was unable, from the condition of the ice, to proceed far in any direction, and returned without results. The wide river, or rather bay, which separated Geeomovialocke from the mainland, was sometimes covered with young ice, too thick for the passage of boats, and too thin for the passage of sledges, and at times was filled with floating masses of old ice; while their ignorance of the language left them unable to express their wants, or to discover the resources of the vicinity in respect to reindeer or dog teams.

It was not until October 29 that Chief-Engineer Melville learned that the first cutter had survived the gale, when he at once started, and, meeting and consulting with Seamen Nindemann and Noros, did all in his power to find and succor his missing comrades. He succeeded in recovering a portion of the records left behind by the commander, but after nearly sacrificing his life from hunger and cold, and feeling assured that the remainder of the first cutter's party had undoubtedly perished, he returned southward to Bulun, and then went to Yakutsk, where he at once commenced preparations for a more extended search when the season would permit, in the mean time forwarding to Irkutsk the members of his party not needed or unfitted for the search.

On March 12, Chief-Engineer Melville was enabled to assemble the relief party at Kas-Karta, the appointed rendezvous, when the search for the first cutter's crew was commenced, and resulted in finding, between March 23 and 27, the remainder of the records, and the bodies of Lieutenant-Commander De Long's party, except those of Ericksen and Alexey, which had been buried in the river.

The bodies were removed and properly interred on high land near Mat-Vai, safe from the effects of the spring floods.

After this had been done, three parties were formed under the charge of Chief-Engineer Melville, Seaman Nindemann, and Fireman Bartlett, respectively, and the coasts and upper portion of the Lena Delta were thoroughly searched for the second cutter's party, but without finding any traces of it. The search was continued as far as the river Jana, and as by this time the sledging season was at an end, the parties returned to Yakutsk, when Chief-Engineer Melville, with all but five of his men, proceeded home by order of the Navy Department. These five remained with Lieutenant Harber, who had been sent to aid in the search.

Considering, then, the condition of the survivors, the unfavorable season, the limited knowledge of the country, the want of facilities for prosecuting the search, and the great difficulty of communicating with the natives, everything possible was done for the relief of the other parties.

The following is a list of the officers and crew of the Jeannette, showing their assignment to the boats on the retreat, and their final fate or disposition : —

FIRST CUTTER (XIV).

Lieutenant-Commander George W. De Long, United States Navy, commanding. Died in the Lena Delta.

Passed Assistant Surgeon James M. Ambler, United States Navy. Died in the Lena Delta.

Mr. Jerome J. Collins (meteorologist). Died in the Lena Delta.

Seaman W. F. C. Nindemann. Sent ahead for relief and rescued by natives ; a witness before the court.

Seaman Louis P. Noros. Sent ahead for relief and rescued by natives ; a witness before the court.

Seaman Heinrich H. Kaack. Died in the Lena Delta.

Seaman Carl A. Görtz. Died in the Lena Delta.

Seaman Adolph Dressler. Died in the Lena Delta.

Coppersmith Walter Lee. Died in the Lena Delta.

Seaman Hans H. Ericksen. Died in the Lena Delta.

Coalheaver Nelse Iversen. Died in the Lena Delta.
Coalheaver George W. Boyd. Died in the Lena Delta.
Seaman Ah Sam. Died in the Lena Delta.
Seaman Alexey (dog-driver and hunter). Died in the Lena Delta.

SECOND CUTTER (VIII).

Lieut. Charles W. Chipp, United States Navy, commanding.
Seaman William Dunbar (ice pilot).
Seaman Alfred Sweetman.
Seaman Henry D. Warren.
Seaman Peter E. Johnson.
Seaman Edward Starr.
Seaman Albert G. Kuehne.
Coalheaver Walter Sharvell.
Of which boat, with her crew, no record exists subsequent to the gale of September 12, 1881.

WHALEBOAT (XI).

Chief-Engineer George W. Melville, United States Navy, commanding. Rescued by natives; a witness before the court.

Lieutenant John W. Danenhower, United States Navy. Rescued by natives; a witness before the court.

Mr. Raymond L. Newcomb (naturalist and taxidermist). Rescued by natives; a witness before the court.

Seaman John Cole (boatswain). Rescued by natives; now an inmate of the Government Insane Asylum.

Fireman James H. Bartlett. Rescued by natives; retained in Siberia to assist Lieutenant Harber.

Seaman Herbert W. Leach. Rescued by natives; retained in Siberia to assist Lieutenant Harber.

Seaman Henry Wilson. Rescued by natives; a witness before the court

Seaman Frank E. Manson. Rescued by natives; retained in Siberia to assist Lieutenant Harber

Seaman Charles Tong Sing. Rescued by natives; a witness before the court.

Coalheaver John Lauterbach Rescued by natives; retained in Siberia to assist Lieutenant Harber.

Seaman Aneguin (dog-driver and hunter). Rescued by natives; retained in Siberia to assist Lieutenant Harber; subsequently died at Kirinsk.

Sixth. As to "the general conduct and merits of each and all the officers and men of the expedition."

There is conclusive evidence that aside from trivial difficulties, such as occur on shipboard even under the most favorable circumstances, and which had no influence in bringing about the disasters of the expedition, and no pernicious effect upon its general conduct, every officer and man so conducted himself that the court finds no occasion to impute censure to any member of the party.

In view, then, of the long and dreary monotony of the cruise, the labors and privations encountered, the disappointment consequent upon a want of important results, and the uncertainty of their fate (and apart from a natural desire to tread lightly on the graves of the dead), the general conduct of the *personnel* of the expedition seems to have been a marvel of cheerfulness, good-fellowship, and mutual forbearance, while the constancy and endurance with which they met the hardships and dangers that beset them entitle them to great praise.

Besides the mention already made, however, special commendation is due to Lieutenant-Commander De Long for the high qualities displayed by him in the conduct of the expedition; to Chief-Engineer Melville, for his zeal, energy, and professional aptitude, which elicited high encomiums from his commander, and for his subsequent efforts on the Lena Delta; and to Seamen Nindemann and Sweetman, for services which induced their commander to recommend them for medals of honor.

Finally, it should be stated that there are several of the survivors of the Jeannette who have not yet returned from Siberia, and whose testimony might or might not modify the conclusions set forth in this report.

WM. G. TEMPLE,
Commodore, United States Navy, president.

SAM. C. LEMLY,
Master, United States Navy, judge-advocate.

And the doors having been reopened, the court then, at 4 P. M., adjourned to await the further orders of the honorable Secretary of the Navy.

WM. G. TEMPLE,
Commodore, United States Navy, president.

SAM. C. LEMLY,
Master United States Navy, judge-advocate.

NAVY DEPARTMENT,
OFFICE OF THE JUDGE-ADVOCATE-GENERAL,
February 17, 1883.

Respectfully submitted, with the recommendation that the finding of the court be approved.

WM. B. REMEY,
Judge-advocate-general.

NAVY DEPARTMENT, *February* 17, 1883.

The finding of the court is approved.

WM. E. CHANDLER,
Secretary of the Navy.

EIGHTY-FIFTH DAY.

NAVY DEPARTMENT,
Washington, D. C., Saturday, April 7, 1883 — 10.30 A. M.

The court met pursuant to the adjournment of yesterday.

Present, Commodore William G. Temple, United States Navy, president; Commander Frederick V. McNair, United States Navy, member; and Lieutenant Richard Wainwright, United States Navy, judge-advocate.

The record of the proceedings of Friday, April 6, 1883, the eighty-fourth day of the inquiry, was then read, and, after correcting clerical errors, was approved.

The court was then cleared for deliberation, and agreed upon the following report: —

In obedience to the order of the honorable Secretary of the Navy, dated March 29, 1883, the court of inquiry of which Commodore William G. Temple, United States Navy, is president, reassembled at the Navy Department, at 12 o'clock M. on Friday, the 30th instant, for the purpose of completing the investigation of circumstances of the loss in the Arctic seas of the exploring steamer Jeannette, and the death of Lieutenant-Commander De Long and others of the officers and men, &c.

Having concluded the examination of the survivors of that vessel who have recently returned from Siberia, the court have the honor herewith to report its further proceedings, with the testimony, and, after mature consideration of the evidence adduced, find that no modification is requisite in their conclusions reported February 12, 1883.

WILLIAM G. TEMPLE,
Commodore, United States Navy, president.

RICHARD WAINWRIGHT,
Lieutenant, United States Navy, judge-advocate.

And the doors being reopened, the court then, at 11.50 A. M., adjourned to await the further orders of the honorable Secretary of the Navy.

WILLIAM G. TEMPLE,
Commodore, United States Navy, president.

RICHARD WAINWRIGHT,
Lieutenant, United States Navy, judge-advocate.

NAVY DEPARTMENT,
OFFICE OF THE JUDGE-ADVOCATE-GENERAL,
April 23, 1883.

Respectfully submitted, with the recommendation that the finding of the court be approved.

WM. B. REMEY,
Judge-advocate-general.

NAVY DEPARTMENT, *April* 23, 1883.

The finding of the court is approved.

WM. E. CHANDLER,
Secretary of the Navy.

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